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Studies in the genus *Hypericum* L. (Guttiferae) 8. Sections 29. *Brathys* (part 2) and 30. *Trigynobrathys**

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Synopsis. New collections from Colombia (J. R. I. Wood) and Ecuador (*Flora of Ecuador* collectors) have necessitated a reorganization of *Hypericum* sect. 29. *Brathys*. The mainly woody species, described in Part 7 (Robson, 1987), have increased in number from 61 to 75 by the addition of 11 new species (one as yet unnamed) and the transfer of three species provisionally allocated to sect. *Knifa* (Robson, 1987). The remainder of this section has been reduced to subsectional status under sect. 30. *Trigynobrathys*. The treatment of sect. *Brathys* is completed by accounts of 13 mainly herbaceous species not included in Part 7, two of which are new. A new enumeration of the 88 species of sect. *Brathys* and a revised key are provided, and the section is divided into four subsections: 1. subsect. **Styphelioides** N. Robson, **subsect. nov.**, 2. subsect. **Phellotes** N. Robson, **subsect. nov.**, 3. subsect. *Brathys*, 4. subsect. *Spachium* R. Keller. Sect. 30 *Trigynobrathys* is divided into two subsections: subsect. **Connatum** (R. Keller) N. Robson, **comb. nov.** and subsect. **Knifa** (Adanson) N. Robson, **stat.nov.**, and a systematic account is given of the 52 species. A discussion of the morphology, chromosome numbers, hybrids, distribution, and evolution of each section is included.

The following other new taxa (**sp. nov.** or **subsp. nov.**) are described in sect. 29. *Brathys*: *Hypericum phellos* subsp. *marcescens* N. Robson (Colombia: Santandér), *H. matangense* N. Robson (Ecuador: Morona-Santiago), *H. callacallanum* N. Robson (Peru: Amazonas), *H. gladiatum* N. Robson (Colombia: Boyacá), *H. espinalii* N. Robson (Colombia: Cauca), *H. castellanoi* N. Robson (Colombia: Boyacá, Venezuela: Mérida), *H. asplundii* N. Robson (Ecuador: Pichincha), *H. radicans* (Columbia: Boyacá), *H. paramitanum* N. Robson (Venezuela: Trujillo), *H. woodianum* N. Robson (Colombia: Cundinamarca), *H. harlingii* N. Robson (Ecuador: Loja), *H. rubritinctum* N. Robson (Mexico: Guerrero, México), *H. beamanii* N. Robson (Guatemala: Sololá); in sect. 30. *Trigynobrathys*: *H. cordatum* subsp. *kleinii* N. Robson (Brazil: Paraná, Sta Catarina), *H. pedersenii* N. Robson (Brazil: R. G. do Sul), *H. campestre* subsp. *pauciflorum* N. Robson (Brazil: Paraná to R. G. do Sul, Argentina: Chaco), *H. campestre* subsp. *tenue* N. Robson (Paraguay, Argentina: Misiones), *H. salvadorense* N. Robson (Brazil: R. G. do Sul), *H. silenoides* subsp. *minus* N. Robson (Galapagos Is), *H. relictum* N. Robson (Colombia: Santandér), *H. killipii* N. Robson (Colombia: Santandér, Norte de Santandér).

*For part 1 see Robson (1977); for part 2 see Robson (1981); for part 3 see Robson (1985); for part 7 see Robson (1987).

The following changes of rank (**stat. nov.**) are also made: sect. 29. *Brathys* – *Hypericum chamaemyrtus* subsp. *pseudocaracasanum* (Steyerm.) N. Robson (Venezuela: Lara, Trujillo); sect. 30. *Trigynobrathys* – *H. rigidum* subsp. *meridionale* (Lyman B. Smith) N. Robson (Brazil: São Paulo to Sta Catarina), *H. rigidum* subsp. *sellowianum* (R. Keller) N. Robson (Brazil: Minas Geraes to R. G. do Sul), *H. denticulatum* subsp. *acutifolium* (Elliott) N. Robson (south-eastern U.S.A.), *H. myrianthum* subsp. *tamariscinum* (Cham. & Schlechtendal) N. Robson (Brazil: R. G. do Sul, Uruguay), *H. mutilum* subsp. *latisepalum* (Fern.) N. Robson (south-eastern U.S.A.), *H. pumillum* subsp. *diffusum* (Rose) N. Robson (north-central Mexico). One is also a new name (**stat. et nom. nov.**): *H. rigidum* subsp. *bracteatum* N. Robson. One new combination (**comb. nov.**) is made: *H. cordatum* (Vell.) N. Robson.

INTRODUCTION

Separation of sects *Brathys* and *Trigynobrathys*

One of the main problems in revising the sectional classification of *Hypericum* L. has been the recognition of the boundary between *Brathys* and *'Spachium'*. Keller (1893) ranked these taxa as subsections, differentiating them respectively as shrubs or subshrubs (subsect. *Eubrathys*) and herbs (subsect. *Spachium*). He distinguished two further groups, subsects *Connatum* (subshrubs with connate leaves – *H. connatum* Lam.) and *Multistamineum* (herbs with spike-like inflorescence and numerous stamens – *H. angulosum* Michaux = *H. denticulatum* subsp. *acutifolium* and *H. pilosum* Michaux = *H. setosum*), for species that did not fall easily into the major shrub/herb categories. When revising his treatment for the second edition of *Die natürlichen Pflanzenfamilien* (Keller, 1925), he merged these last two subsections with subsect. *Spachium* and elaborated his differentia:

Subsect. *Eubrathys*. Subshrubs or small shrubs with often dense appressed foliage; flowers often terminal, usually relatively large, i.e. about 1·5 cm in diameter, rarely less.

Subsect. *Spachium*. Annual or perennial herbs; stamens 5–50, rarely more.

Subsect. *Eubrathys* in Keller's revised treatment still contained two species that are now allocated to other sections (*H. nitidum* Lam. in sect. 20. *Myriandra* and *H. epigeium* R. Keller in sect. 9. *Hypericum*), as well as several that should have been in his subsect. *Spachium*. This, in turn, contains some species that would now be allocated to sects 9. *Hypericum* and 26. *Humifusoideum*, although most do belong to *'Spachium'*.

In the preliminary key to sections in Part 1 (Robson, 1977: 342), I still maintained the 'mainly shrubby/mainly herbaceous' distinction, supplementing it by characters of inflorescence, leaf margin, and stem internodes and raising *Brathys* and *Spachium* to sectional rank. Further work, however, showed this view to be untenable, because (i) sect. *Brathys* was found to contain herbaceous species, including the type of sect. *Spachium* (*H. gentianoides* (L.) Britton, Sterns & Pogg.) and (ii) the subsidiary characters that were used are not completely diagnostic.

By combining leaf-insertion and leaf-venation characters with type of inflorescence branching, it seemed possible to extract, partly from each section, a group with long narrow leaves and pinnate or single veins. This was described in sect. *Knifa* (Adans.) N. Robson in Part 7 (Robson, 1987) and the correct name for sect. *'Spachium'* excluding *H. gentianoides* and its relatives was shown to be sect. *Trigynobrathys* (Y. Kimura) N. Robson.

Scarcely had Part 7 gone to press, however, when a study of new material from Colombia (J. R. I. Wood) and Ecuador (Swedish and Danish collectors from GB and AAU) showed that sect. *Knifa* in turn was untenable, as it consisted of a shrubby element belonging to sect. *Brathys* and a herbaceous element belonging to sect. *Trigynobrathys*. Even then, the dividing line between these two sections was not completely defined and has remained 'fluid' throughout most of the time during which Part 8 has been written. I am now satisfied, however, that all species have been allocated to the appropriate section, and the distinctions between the sections have become clear, though still not easy to describe.

Sect. **Brathys** comprises 88 species of shrubs (rarely small trees), subshrubs, shrublets or wiry annuals (rarely perennials) with short stem-internodes, leaves plane to completely revolute or completely involute and often united in pairs but not perfoliate, flowers solitary with inflorescence-branching pseudo-dichotomous or (especially in the less shrubby species) dichasial/monochasial or mixed, stamen fascicles almost never distinguishable, and styles usually 3 but plesiomorphically 5(4) and sometimes apomorphically (4)5. It has two primary centres: (i) two closely related species in Belize and Cuba and (ii) the Venezuela-Colombia border (see Part 7: 7). From the latter area the mainly shrubby part has radiated eastward to Roraima, westward to Costa Rica, and southwestward along the Andes to Bolivia, with a disjunct species (*H piriai*) in south-east Brazil and Uruguay. The subshrub-to-annual part has its primitive species in northern Colombia and north-west Venezuela and a secondary centre in southern Mexico. Thence it has spread south-eastward to Panama, eastward to the Greater Antilles, north-westward to southern Baja California and the Revilla Gigedo Islands and, with a disjunction, north-eastward to the eastern U.S.A. and southeastern Canada. The 88 species can now be seen to fall into four distinct groups, which are described as subsections.

Sect. **Trigynobrathys** comprises 52 species of shrubs, subshrubs, shrublets, perennial and annual herbs with stem internodes short to elongate, leaves plane to recurved or very rarely incurved and free or perfoliate, flowers solitary or more usually in dichasial/monochasial cymes or with branching mixed cymose/pseudo-dichotomous (rarely wholly pseudo-dichotomous), and styles 5–2 with two independent reversals from 3 to 5. The primary area of speciation here has been south-eastern Brazil, with a primary radiation (to the south of the Amazon) northward to eastern Brazil (Bahia), and (with major disjunction) to south-eastern U.S.A., southward to Uruguay and northern Argentina, westward to Bolivia, Peru, and northern Chile and thence north along the Andes to southern Colombia and the Galapagos Islands, and west (with disjunction) to New Zealand, Australia, New Caledonia, and New Guinea and (with further disjunction(s)) to scattered localities in south-east Asia. From a secondary centre in north-east Colombia it has spread into eastern Costa

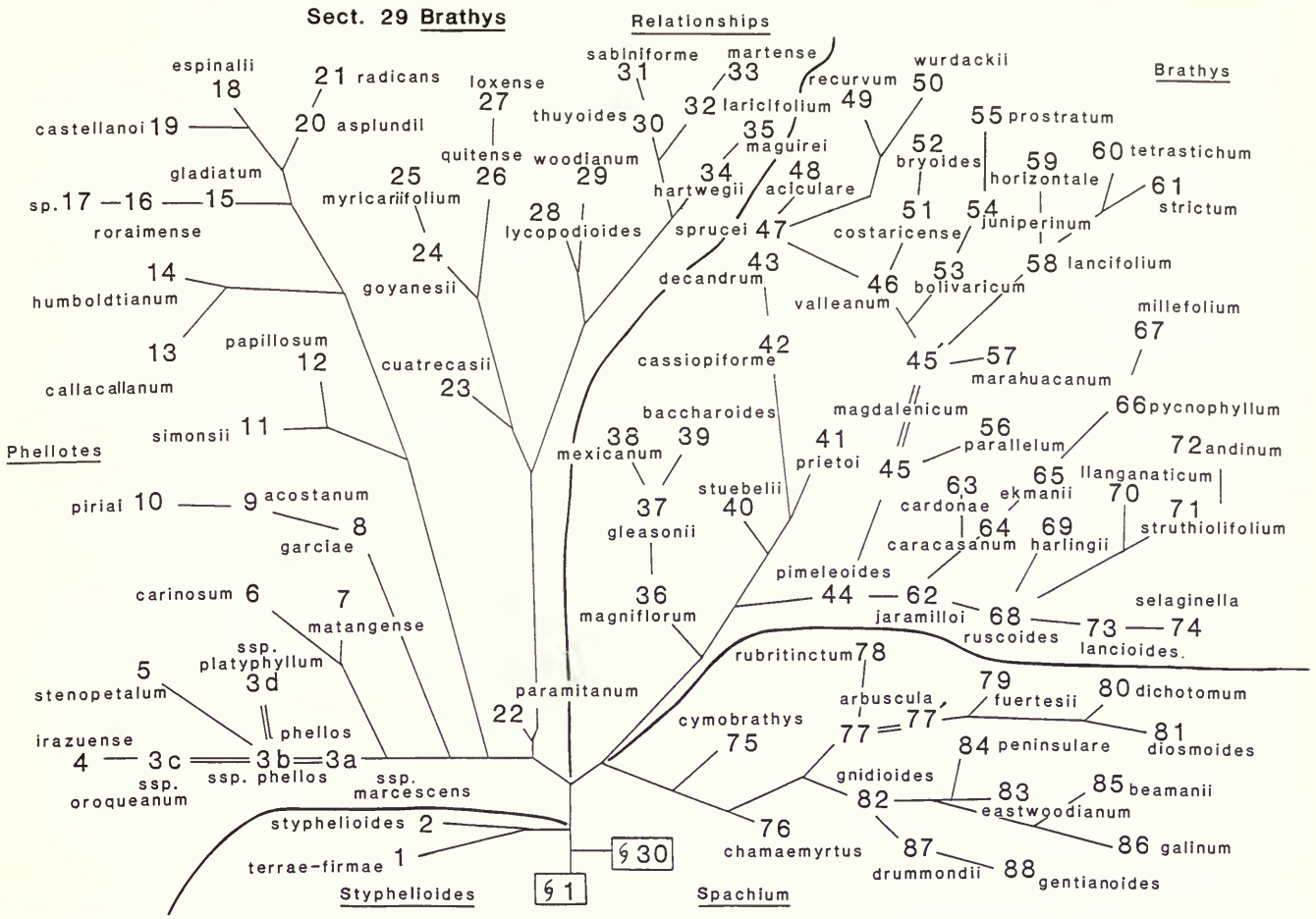


Fig. 1 Sect. 29 *Brathys*. Relationships of the 88 species and related sections. Limits of (named) subsections indicated by bold lines. Revised and expanded from Part 7.

Rica and south along the Andes to northern Argentina and (with disjunction) central Chile. From this secondary centre has arisen a tertiary centre in western Mexico, whence there are trends south-east to Nicaragua and the Greater Antilles, north to the U.S.A. and southern Canada, and east to Cuba. Major disjunctions from the secondary centre have been followed by speciation in Africa and East Asia. Despite these centres of speciation and radiation, only two groups are sufficiently distinct to warrant designation as subsections in this section; and homoplasy (convergence) is so rife as to make a workable key difficult to construct.

As a result of the circumscriptions outlined above, *Brathys* and *Trigynobrathys* can be seen to form distinct entities with distinct but multiple overlapping distributional areas; but there are no single characters that can be used to separate them. Even distinctive combinations of characters are difficult to find:

Sect. *Brathys*: Trees, shrubs, shrublets or wiry herbs. Stem glands sparse or apparently absent; internodes usually shorter than leaves. Leaf pairs free or forming interfoliar ridge or very rarely ± united at base; lamina mostly plane to involute, glands always punctiform. Inflorescence 1-flowered with branching pseudo-dichotomous or, more rarely, 2–15-flowered with branching dichasial/monochasial or mixed. Styles (5–4)3.

Sect. *Trigynobrathys*: Shrubs, subshrubs or ± soft herbs. Stem glands dense; internodes (except basal) usually equalling or exceeding leaves. Leaf pairs free or ± united at base, not forming interfoliar ridge; lamina mostly plane to revolute, glands sometimes elongate. Inflorescence 2–∞-flowered with branching dichasial/monochasial to sympodial or mixed or, more rarely, 1-flowered with branching pseudo-dichotomous. Styles 5–3(2).

Sect. 29. *Brathys*

The revised sect. *Brathys* of 88 species, not 80 as stated in Part 7, and the revised numbering and suggested relationships are shown in Fig. 1. As before, one species is shown as directly derived from another where its characters are all or nearly all apomorphic in relation to the 'ancestral' one. A comparison with Part 7: 4, fig. 1 (using the revised numbering) shows that the relationships of 3. *H. phellos* and Spp. 4–10 are somewhat simpler than was at first thought; 11. *H. simonsii* and 12. *H. papillosum* are basic to the *H. humboldtianum* group (Spp. 13–21), not to the *H. lycopodioides* group (Spp. 23–35), which is related to a new, relict species (22. *H. paramitanum*) e.g. by the basically pinnate leaf venation. All these form subsect. 2. *Phellotes*. Subsect. 3. *Brathys* is as before except for the addition of 39. *H. baccharoides* and the new 69. *H. harlingii*; and subsect. 4. *Spachium* is shown as a

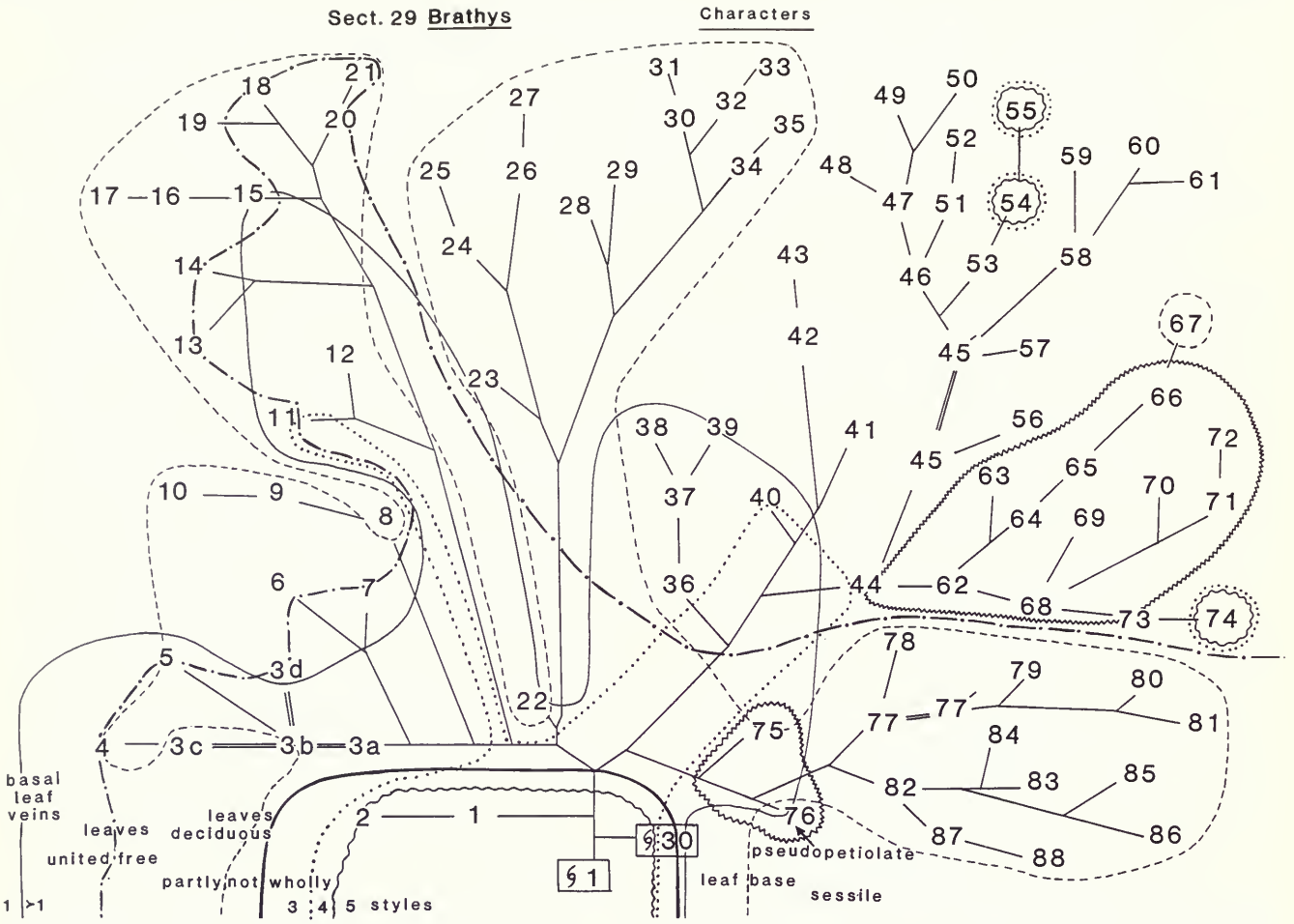


Fig. 2 Sect. 29 *Brathys*. Limits of certain characters within the section and related sections. Note the isolated apomorphic occurrences of 4–5-styled species. Revised and expanded from Part 7.

sister-group of subsect. *Brathys* alone rather than of subsects *Phellotes* + *Brathys*.

(a) *Characters*

The revised character diagram (Fig. 2) shows the limits of the same characters as were depicted in Part 7: 6, fig. 2. Apart from the extensions to subsect. *Spachium*, these diagrams are basically similar. No more trend reversals (e.g. in Spp. 54–55, 67, and 74) have been revealed, except possibly the partly deciduous leaves in Spp. 4 and 5. Indeed, what appeared to be a reversal to wholly persistent leaves in Spp. 9–10 is now seen not to be one; instead the partly deciduous leaves of Sp. 8 are shown to be a specialization. One additional character in the diagram (leaves free v. united) nicely delimits subsect. *Brathys* from subsects *Styphelioides* and *Spachium*, but subsect. *Phellotes* contains species with both conditions. Finally, the pseudopetiolate leaf base in subsect. *Spachium* (Spp. 75–76) is seen to have arisen independently from that in subsect. *Brathys*.

(b) *Distribution and evolution* (Fig. 3)

The six morphological group-headings (a–f) under which the distribution and evolution of sect. *Brathys* were considered in Part 7: 7–12 have been reduced to three subsections, and a fourth (subsect. *Spachium*) has been added. Subsect. 1. *Styphelioides* is confined to Belize and Cuba. Subsect. 2. *Phellotes* is based (morphologically and geographically) in the Colombia/Venezuela border area and extends eastward to Guyana (Roraima), northward to Costa Rica and adjacent Panama, and south-westward along the Andes to northern Peru and, with disjunction, south-eastern Brazil and Uruguay. Subsect. 3. *Brathys* has the same centre as subsect. 2 and a similar distribution; it occurs also in Hispaniola and extends along the Andes as far south as Bolivia, but it does not occur in south Brazil. It is present as well in Roraima (but only the Venezuelan part) and also in southern Venezuela (Cerro de Marahuaca).

Subsect. *Spachium*, too, radiates from north-eastern Colombia (75. *H. cymobrathys*), but mainly northward. Apart from 76. *H. chamaemyrtus*, with a Colombian and a Venezuelan subspecies, all the other species are natives of Central and North America and the West Indies. Disjunctions between northern South America (76. *H. chamaemyrtus*) on the one hand, and southern Mexico (77. *H. arbuscula*) and Honduras (primitive form of 82. *H. gnidioides*) on the other, suggest a northward migration through the early, Greater Antilles land-link between the two Americas (Part 7: 9), with subsequent migration and differentiation from the Belize/

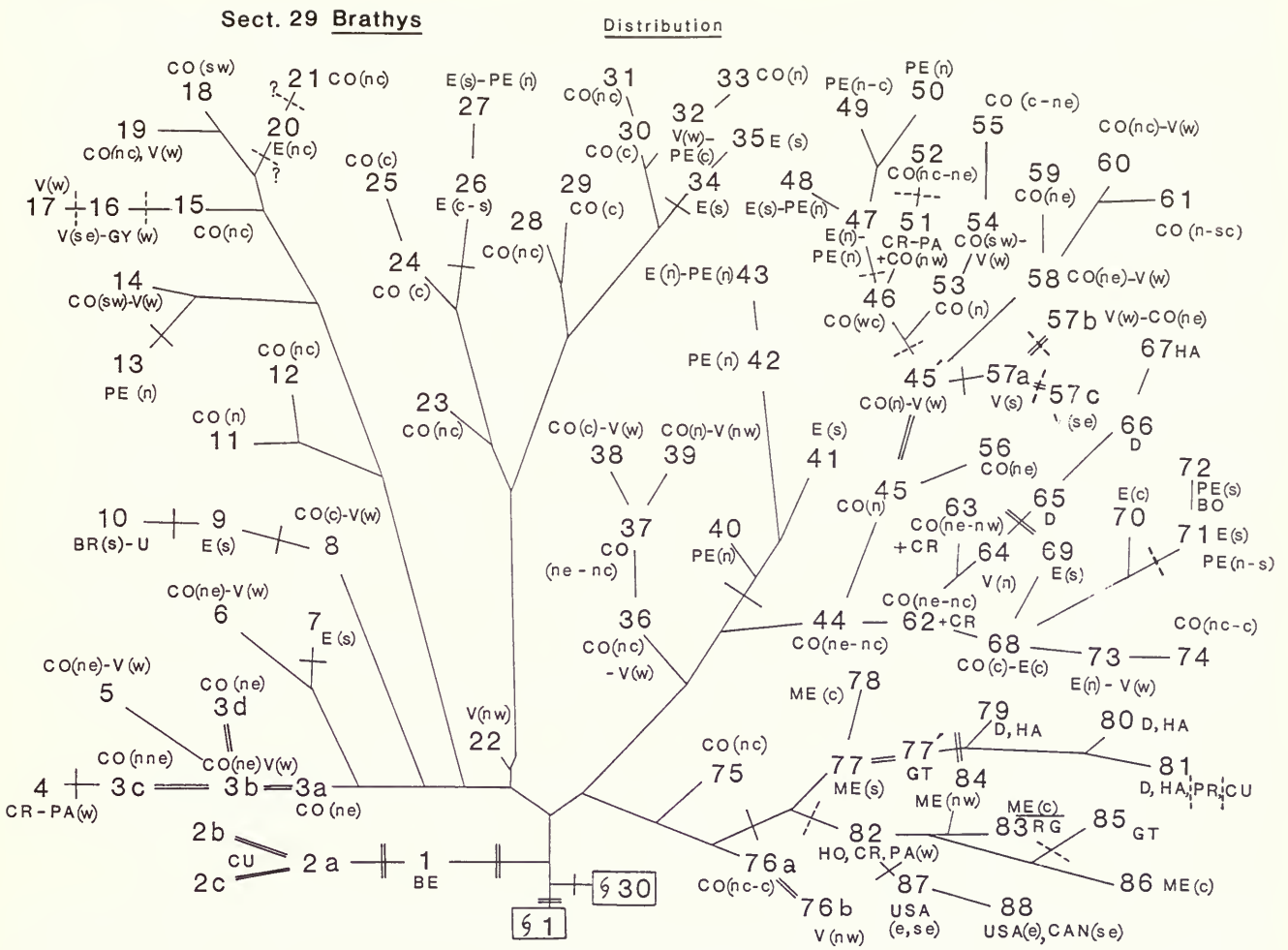


Fig. 3 Sect. 29 *Brathys*. Distribution of the 88 species showing major and minor disjunctions (= across sea, —— across land (major), - - - - across land (minor)). Lower-case letters indicate compass points. Revised and expanded from Part 7. For geographical abbreviations see p. 9.

Guatemala region. The more primitive species, with longer styles (77. *H. arbuscula*), contains an indivisible morphocline from southern Mexico (Chiapas) to Guatemala, whence there is a disjunction in this clade to Hispaniola (79. *H. fuertesii*, 80. *H. dichotomum*, and 81. *H. diosmoides*). These species form an increasingly herbaceous and procumbent series, and the most specialized one, *H. diosmoides*, has extended its area into Puerto Rica and Cuba. Whether the disjunction between Guatemala and Hispaniola is a result of overland or long-distance migration is unclear. The latter seems more likely in view of the relatively specialized form of these species. Northward, *H. arbuscula* or its predecessor has given rise to 78. *H. rubritinctum*, which occurs in central Mexico (Guerrero, México).

The initially more southern branch of the Central American radiation starts with 82. *H. gnidioides*, which is very variable in Honduras and, to a lesser extent, Nicaragua, and shows a south-eastward morphocline to western Panama. Here there occurs an extremely reduced prostrate form ('*H. woodsonii*'), which is linked to the more typical one by a continuous series of intermediates. North-west from Honduras the nearest relatives of *H. gnidioides* are (a) in west-central Mexico and the Revilla Gigedo Islands (83. *H. eastwoodianum*) with a derivative species in the extreme south of the Baja California peninsula (84. *H. peninsulare*) and (b) in east-central Mexico (86. *H. galinum*) with a sister-species in the mountains of Guatemala (85. *H. beamanii*). Finally, 87. *H. drummondii*, from south-eastern U.S.A., is morphologically very close to the least shrubby (annual?) Honduran form of 82. *H. gnidioides*; and 88. *H. gentianoides* (eastern U.S.A. and extreme southern Canada) is more reduced than *H. drummondii*. There is no evidence, in the form of relict species (etc.), that *H. drummondii* has reached the southern United States overland. Indeed, its primitive form is so close morphologically to *H. gnidioides* that such a long migration without greater differentiation seems unlikely. I am therefore inclined to attribute the disjunction to ancient long-distance migration, possibly the result of carriage of propagules by extra-strong winds or birds.

Sect. 30. *Trigynobrathys* and its subdivision

As here delimited, sect. *Trigynobrathys* comprises 52 species that vary widely in habit from shrubs 2 m tall to prostrate annual herbs (Fig. 4). It can be divided into two subdistinct groups:

1) Shrubs, subshrubs or woody annuals; styles 5(4–3); capsule usually broadly ovoid to globose; mainly south of the Amazon, also Chile, the Andes from Peru to Colombia,

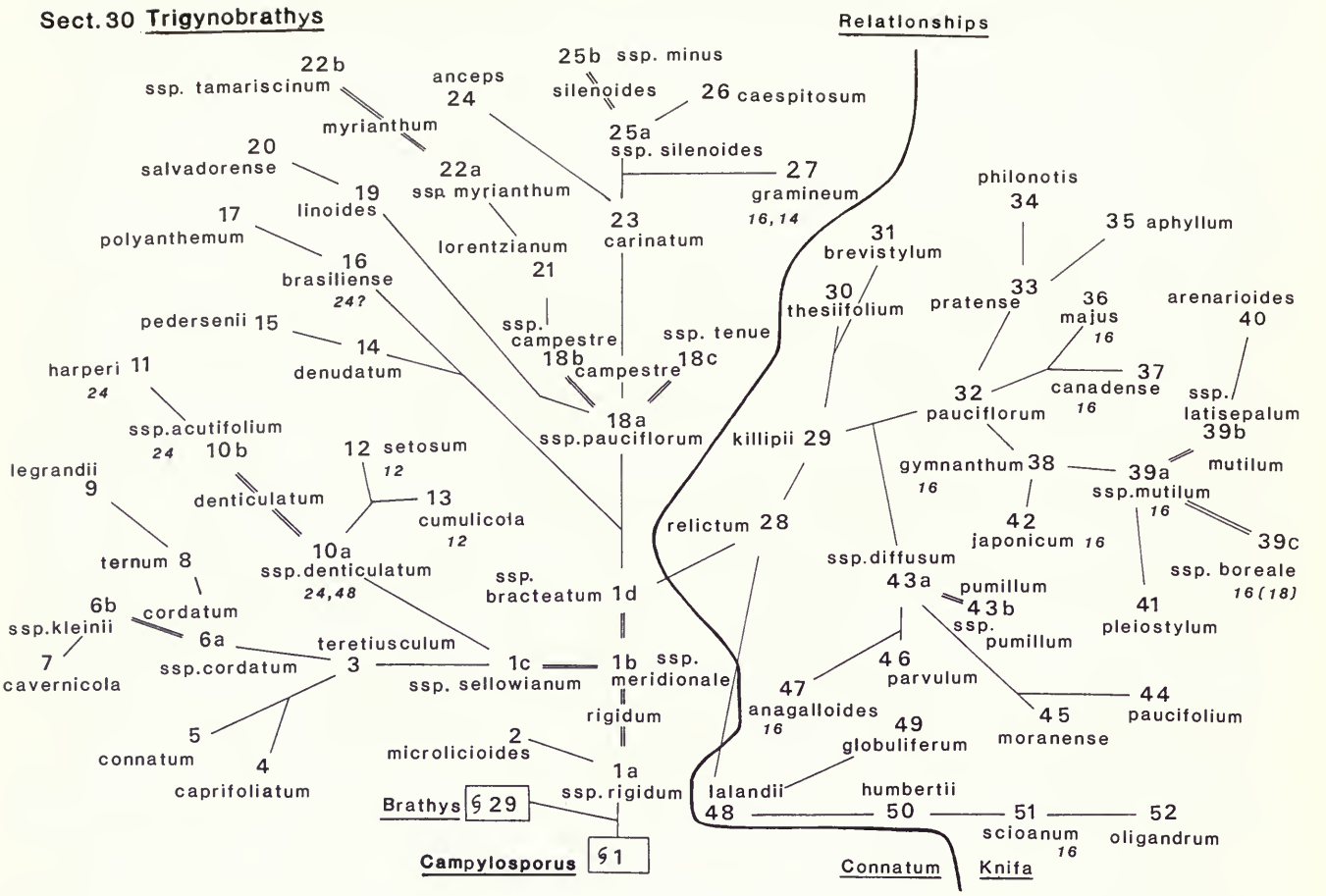


Fig. 4 Sect. 30 *Trigynobrathys*. Relationships of the 52 species and related sections, showing known diploid chromosome numbers. Limits of (named) subsections indicated by bold line. Subspecies linked by paired lines.

Galapagos Is., eastern N. America, and Australasia north to Taiwan, Vietnam, and Bhutan ('*Trigynobrathys* proper'). Spp. 1–27.

2) Subshrubs, shrublets or herbaceous annuals; styles (2) 3(4–8); capsule usually narrowly ovoid to ellipsoid or cylindric; mainly north of the Amazon, Andes from Venezuela south to Argentina, Central and North America and Greater Antilles, also Africa, Madagascar, and east Asia, south Australia, and New Zealand ('*Knifa*'). Spp. 28–52.

The presence of 25. *H. silenoides*, 26. *H. caespitosum*, and 27. *H. gramineum* in group 1) and of various other exceptions to the 'broad 5-styled ovary v. narrow 3-styled ovary' division makes it difficult to define *Knifa* as a subsection. An undivided section of 52 species, however, is rather unwieldy and so an attempt has been made to do so as the subsections in practice are usually easily distinguishable (see pp. 51 and 95).

Morphology of sect. 30. *Trigynobrathys* (Fig. 5)

The species in this section vary from tall shrubs (up to 2 m) to erect or prostrate herbaceous annuals. They all lack dark glands completely and have no resin glands on the lower surface of the leaf; and there are no fringing glands on leaves, sepals or petals. All species have marginal punctiform leaf glands (often very small). The laminar glands are usually also wholly punctiform, but very rarely lines of punctate glands may coalesce to produce streaks (30. *H. thesiifolium* in part).

(a) *Leaves*

As in sect. 29. *Brathys*, the leaves in part of the species with the most primitive characters (1. *H. rigidum*) have parallel and open venation; but even within this species, forms with partially pinnate venation occur. Pinnation occurs in two ways:

i) by union of the laterals with the midrib, the outer ones nearest the base, with the venation remaining apparently open (e.g. in 6. *H. cordatum*, Fig. 13) or becoming closed (e.g. in 4. *H. caprifoliatum*).

ii) by development of secondary laterals along the midrib as the space between it and the primary laterals increases (e.g. in the most primitive form of 16. *H. brasiliense*). Method i) is often combined with method ii), as in 18. *H. campestre*, Fig. 15 A–C. Other primary laterals may produce secondaries on the marginal side, and the system may become close (e.g. in 25. *H. silenoides*, Fig. 17 A–B).

In the more shrubby species with free leaf-bases, the leaves are sooner or later deciduous (e.g. in 14. *H. denudatum*); but where the leaves are herbaceous or the bases united, they persist. In no species are they partially deciduous, as they are in many species of sect. *Brathys*. Again, in contrast to much of the sect. *Brathys*, the lamina is usually plane to revolute, rarely involute or conduplicate (e.g. in 9. *H. legrandii* or 13. *H. cumulicola*).

(b) *Inflorescences*

Unlike the species of sect. *Brathys*, where the 1-flowered

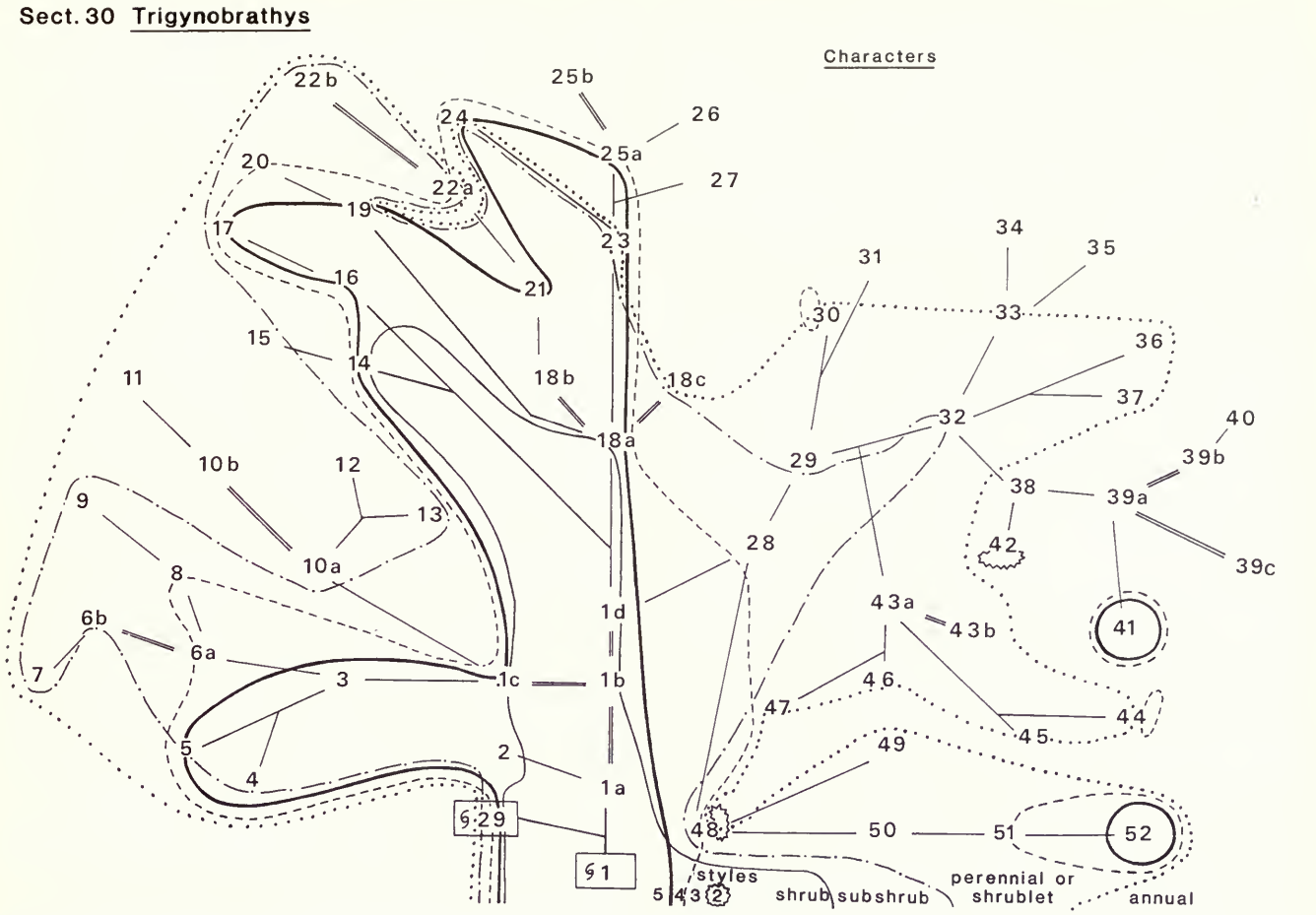


Fig. 5 Sect. 30 *Trigynobrathys*. Limits of certain characters within the section and related sections. Note the isolated apomorphic occurrences of 4–5-styled species.

inflorescence with pseudo-dichotomous branching is commoner than the dichasium/monochasium, those of sect. *Trigynobrathys* more frequently have dichasial/monochasial branching, which can become elaborate (e.g. to the sixth grade in 22. *H. myrianthum*, Fig. 16 B–C). Pseudo-dichotomous branching, however, is far from absent (e.g. in 50. *H. humbertii*, Fig. 22 A), and mixed inflorescences with both types of elaboration are of frequent occurrence in subsect. *Knifa*. In some advanced species of this subsection, only one branch of the pseudo-dichotomy normally develops, resulting in a sympodium (e.g. in 42. *H. japonicum* variant 5. 'humifusum').

Lateral inflorescences are usually present as well as the terminal one, but they sometimes are slow to develop (e.g. in 27. *H. gramineum*, Fig. 17 E).

Variants of 1. *H. rigidum*, the species most similar to those of the African sect. 1. *Campylosporus*, already display most combinations of these types of inflorescence elaboration: 1-flowered with branching wholly lateral (Fig. 12 C), 1–3-flowered with branching wholly lateral (Fig. 12 B), 1–7-flowered with branching at first pseudo-dichotomous then lateral (Fig. 12 A).

(c) *Flowers and fruits*

As is usual in sect. *Brathys*, the perianth in sect. *Trigynobrathys* is pentamerous with the sepals appressed to the petals. These are usually longer than the sepals and are always spreading ('flowers stellate'). The sepals vary with the relative width of the base from 1–9-nerved, the nerves often becoming (more) prominent in fruit. There are trends in the petals from presence to absence of an apiculus and pellucid glands, but these are of no more than specific taxonomic value. As in sect. *Brathys*, the petals and stamens are persistent, the petals rolling downward after anthesis and sometimes enclosing the developed capsule.

The number and size of the stamens are correlated in general with flower size as a whole. In the larger flowers the five fascicles are sometimes distinct at the base (e.g. in 16. *H. brasiliense*; c.f. Reichardt, 1878: fig. 34), but they usually form a narrow complete whorl. In the smallest flowers (e.g. in 37. *H. canadense* or 51. *H. scioanum*) the reduced number of stamens separates again into groups, normally three but sometimes five or an irregular grouping that does not correspond to that of the original fascicles.

The styles vary from 5 to 3 or rarely 2 (e.g. in forms of 42. *H. japonicum*). The intermediate number 4, while never uniquely characteristic of a species, is possibly commoner in sect. *Trigynobrathys* subsect. *Connatum* than in most other sections of *Hypericum*. It recurs in several species, nearly all in subsect. *Knifa*, which are normally 3-styled. As was stated above, however, there are two species (41. *H. pleiostylum*, 52. *H. oligandrum*) in which this trend is further reversed, the number of styles increasing in *H. oligandrum* to 4–5 and in *H.*

pleiostylum up to 8. The form and behaviour of the styles do not appear to have taxonomic value, although there is some variation: most curve outward, but some later curve inward again. The form of the stigmas, however, can sometimes be utilized; it varies from not or scarcely enlarged (rare) to very broadly capitate or even peltate, and the style immediately below is often gradually enlarged. This gradual enlargement may occur below a narrow, even rounded, apex (stigma clavate), a state characteristic of the *H. lalandii* group (Spp. 48–52).

Cytology and hybrids in sect. 30. *Trigynobrathys*

The most primitive chromosome number in the genus, n = 12, occurs in subsect. *Connatum*, in 10. *H. denticulatum*, 11. *H. harperi*, and possibly 16. *H. brasiliense*, and the only polyploid number so far recorded (n = 24) is found in the *H. denticulatum* group where *H. denticulatum* subsp. *denticulatum* is sometimes diploid, sometimes (auto-?) tetraploid. The two more advanced members of this group, however, have n = 6. This number cannot (as Webb (1980) averred) here represent the basic number of the whole genus, thus making n = 12 tetraploid. The species with this number, 12. *H. setosum* and 13. *H. cumulicola*, are clearly derived from 10. *H.denticulatum* (n = 12, 24) and, for whatever reason, must be regarded as haploids unless (which seems more unlikely) the whole complement is still present with the chromosomes united in pairs.

The numbers n = 11–9 have not yet been recorded in sect. *Trigynobrathys* except for n = 9 in 39c. *H. mutilum* subsp. *boreale* (Kapoor, 1972), where it represents a secondary increase in a taxon that normally has n = 8. Otherwise all chromosome counts of species in subsect. *Knifa* and elsewhere in subsect. *Connata* have yielded n = 8 or 2n = 16, the sole exception being a New Guinea plant of *H. gramineum* (n = 7) (Borgmann, 1964, as *Hypericum* sp.). Whether this gap in numbers is real or, more likely, merely the result of insufficient work, remains to be seen.

Hybrids have been found only in the *H. canadense* group (Spp. 36–42), all the North American (i.e. excluding Mexican) species of which are apparently interfertile. Webb (1980) reported that hybrids and putative hybrids in this group showed a lower chromosome stainability than did species. From field observations and herbarium studies, he deduced that the name *H. dissimulatum* Bickn. has been applied to recurrent hybrids between 37. *H. canadense* and two subspecies of 39. *H. mutilum* (subsp. *mutilum* and subsp. *boreale*).

The only other suspected hybrid that has been reported is from Bhutan, where the distributions of 27. *H. gramineum* and 42. *H. japonicum* variant 4c ('calyculatum') overlap (Robson, 1972: 267).

Distribution and evolution in sect. 30. *Trigynobrathys* (Fig. 6)

Whereas sect. *Brathys* is centred north of the Amazon, in the north-eastern Andes and Greater Antilles, sect. *Trigynobrathys* has its centre in southern Brazil. The evolutionary divergence pattern of *Hypericum* as a whole suggests that the split between them occurred early, probably in Africa before the progenitors of either section reached South America (Robson, 1987: 7). The transference of the shrubby species from (subsect.) *Knifa* to sect. *Brathys* makes it seem even less likely that there was a later sectional divergence across the Amazon basin. Indeed, the disjunction of subsect. *Knifa* from subsect. *Connatum*, which must of course have been later, involves that very region.

(a) *Principal clades (i) and (ii): relatives of* H. rigidum *subsp.* sellowianum

The most primitive species in sect. *Trigynobrathys* (i.e. the one that is morphologically nearest to the east African *H. revolutum* subsp. *keniense*) is 1. *H. rigidum*, of which the most primitive subspecies (subsp. a. *rigidum*) is confined to Paraná in southern Brazil and has a closely related derivative species, 2. *H. microlicioides*, in the same province and also in Santa Catarina. All the other parts of the section are related to other subspecies of *H. rigidum*. Subsp. b. *meridionale*, with a somewhat wider distribution (São Paulo to Santa Catarina), has apparently given rise to two further subspecies: c. subsp. *sellowianum*, which has the widest distribution (southern Minas Geraes to Rio Grande do Sul), and d. subsp. *bracteatum*, which has a relict distribution in Paraná.

Of the two major clades related to subsp. *sellowianum*, one, clade (i), is confined to south-eastern Brazil and adjacent regions of Paraguay, Argentina, and Uruguay. In it the tendency to shorten and broaden the leaves in that subspecies is at first elaborated, so that the leaves are very broad in 3. *H. teretiusculum* and the pairs connate in 4. *H. caprifoliatum* and 5. *H. connatum*. In the other derivatives of *H. teretiusculum* they become smaller and narrower, and this trend finishes in 9. *H. legrandii* (Uruguay), where they are linear-incurved. In the related 8. *H. ternum* they are sometimes in whorls of three.

The other major clade related to subsp. *sellowianum* (ii) begins morphologically not far from *H. teretiusculum*, but geographically its members are very distant – in south-eastern U.S.A. The affinities of the *H. denticulatum* (Spp. 10–13) are clearly with the *H. teretiusculum* group (e.g. they have similar leaves and inflorescence-branching), but both groups seem to be related independently to *H. rigidum* subsp. *sellowianum*. Although the American species are woody herbs rather than subshrubs, the morphological differences are not great, which suggests that their ancestor reached the U.S.A. by long-distance dispersal (not overland), from south of Amazonia. *H.rigidum* and *H. teretiusculum* are plants of moist habitats, and it is not impossible to imagine that seeds of these or of a related species were transported externally (?) by birds on a northward migration. The suggestion of a long-distance origin of the *H. denticulatum* group invites a comparison with relatively few examples – 'a remarkable group of 6 species disjunct between the eastern United States and temperate South America' (Raven, 1963). These include *Hypericum gentianoides* (sect. *Brathys*), which must have travelled in the opposite direction more recently, being one of the most highly evolved species in that section and not morphologically distinct in South America (c.f. Smith, 1962; Thorne, 1972). Smith (1962) regards *Hypericum* as one 'of the best examples . . . of a wide-ranging Andean element in southern Brazil'; but this scenario applies only to the *H. carinatum*/*H. silenoides* and (possibly) *H. relictum* groups (Spp. 23–26, 28–29), the relationships of the other southern Brazilian species being more varied.

Examples of birds that regularly migrate from southern Brazil to the south-eastern United States and back have not

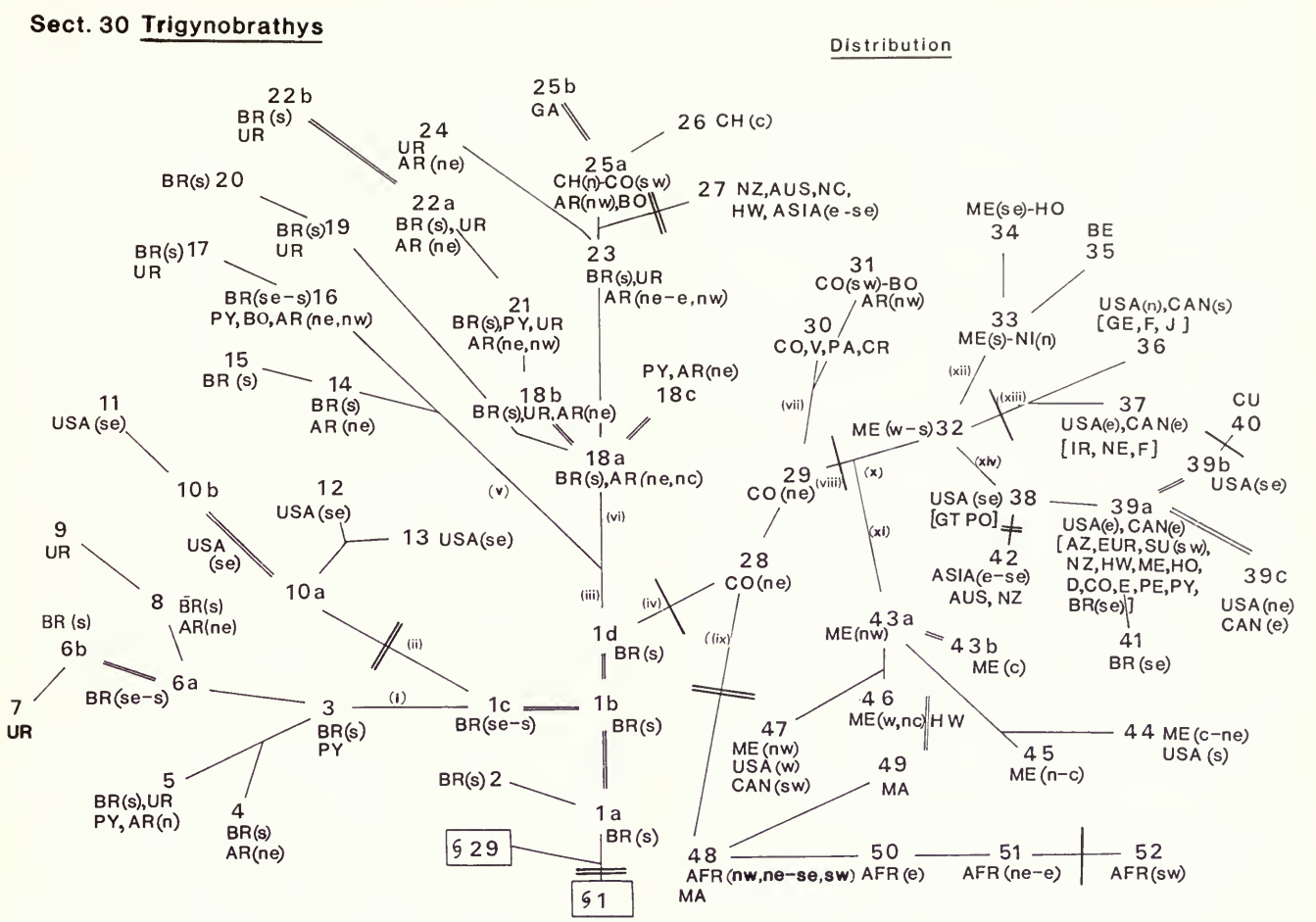


Fig. 6 Sect. 30 *Trigynobrathys*. Distribution of the 52 species showing major and minor disjunctions (= across sea, — across land). Paired relationship lines indicate subspecies. Lower-case letters indicate compass points. Introductions (ancient or recent) within square brackets.

Geographical abbreviations used in Figs 3 and 6

AFR	Africa	CO	Colombia	GY	Guyana	NI	Nicaragua
AR	Argentina	CR	Costa Rica	HA	Haiti	NZ	New Zealand
ASIA	Asia	CU	Cuba	HO	Honduras	PA	Panama
AUS	Australia	D	Dominican Republic	HW	Hawaii	PE	Peru
AZ	Azores	E	Ecuador	IR	Ireland	PR	Porto Rico
BE	Belize	EUR	Europe	J	Japan	PY	Paraguay
BO	Bolivia	F	France	MA	Madagascar	SU	Soviet Union
BR	Brazil	GA	Galapagos Islands	ME	Mexico	UR	Uruguay
CAN	Canada	GE	Germany	NC	New Caledonia	USA	United States
CH	Chile	GT	Guatemala	NE	Netherlands	V	Venezuela

yet been found;[2] but I have little doubt that such migrations occur. At any rate, the bird(s) that hypothetically transported *H. gentianoides* in relatively recent times would be unlikely to belong to the same species as the ones that were responsible for the ancient conveyance of the *H. denticulatum* ancestor. Raven (1963) states that all the temperate N. America/S. America disjuncts date from the late Mesozoic or later, and no more accurate dating seems to be possible yet.

(b) Principal clade (iii): H. brasiliense, H. campestre, *and relatives*

The other two principal clades in sect. *Trigynobrathys* both derive from 1d. *H. rigidum* subsp. *bracteatum*, which is represented as yet only by the type specimen, from southern Brazil (São Paulo). Despite its apparent rarity, this subspecies forms a morphological link between the basic species, *H. rigidum*, and the two remaining principle clades. Of these, (iii) is distributed largely to the south of Amazonia and across the southern Pacific Ocean, whereas clade (iv) (subsect. *Knifa*) is centred to the north of Amazonia and across the northern Pacific Ocean and the Atlantic Ocean (northern and southern).

Clade (iii) divides into the *H. brasiliense* group (clade (v), Spp. 14–17) and the *H. campestre* group (clade (vi), Spp. 18–27). Clade (v) is confined to south Brazil, Uruguay, and adjacent Argentina, except for 16. *H. brasiliense* itself, which extends from Paraná northward along the eastern hills, Serra

[2]But see Cruden (1966) for a detailed discussion of bird migrants as vectors between California and Chile.

da Mantiqueira and S. do Espinhaço, to Bahia and westward to Paraguay, southern Bolivia, and northern Argentina and possibly into Peru (see p. 87). Clade (vi), based on the variable 18. *H. campestre*, is also largely restricted to southern Brazil, Uruguay, and adjacent Argentina, but 18c. *H. campestre* subsp. *tenue* occurs in Paraguay and north-eastern Argentina. 23. *H. carinatum* is more widespread, extending south-westward (in Argentina) to Buenos Aires and Córdoba and westward to Paraguay. In Paraguay it is represented by two forms, one tall and more shrubby ('*H. altissimum*', '*H. megapotamicum*') and the other short and more herbaceous, even possibly annual ('*H. paraguense*'). There are intermediate states elsewhere in the range of the species that preclude taxonomic recognition of these forms, but '*H. paraguense*' links typical *H. carinatum* with the Andean and trans-Pacific herbaceous species.

The most primitive form of 25. *H. silenoides* is in northern coastal Chile ('*H. paposum*'), whence there is a northward morphocline along the coastal foothills to Lima. There is a gap in distribution, though scarcely in variation, between there and the Ecuador/Peru border, where a secondary, higher-altitude, cline originates. This extends northward to Colombia (Antioquía) and southward to Bolivia and north-western Argentina. 26. *H. caespitosum*, from central Chile, is most similar to to some central Peruvian (Ayacucho) forms of this cline, whereas the endemic Galapagos Is. 25b. *H. silenoides* subsp. *minus* is morphologically closest to plants of the type subspecies from southern Ecuador. Like (all?) the other Galapagos biota, therefore, it seems to have reached the islands across ocean, probably in this case by means of wind-borne or bird-borne propagules.

The north Chilean form of *H. silenoides* ('*H. paposum*') is the most similar part of this species to 27. *H. gramineum*, which is separated from it by the width of the Pacific Ocean (Robson, 1972: fig. 3 modified). The primitive form of *H. gramineum*, in turn, occurs in the south of its area (New Zealand, Tasmania, South Australia), whence there are two reduction trends: (a) within Australia northward and westward, to small erect annuals and (b) from New Zealand through New Caledonia to New Guinea, to elongate, narrow-leaved grass-like perennials (*H. gramineum* sensu stricto). Plants similar to those of Queensland and Northern Territory occur in lowland Vietnam and Taiwan, whereas the narrow-leaved form of Yunnan and the eastern Himalaya appears to belong to trend (b). As with *H. silenoides*, so here the present distribution of *H. gramineum* is only explicable in terms of long-distance dispersal, first (ancient) to New Zealand and Australia and subsequently to south-east Asia (see p. 95). Its introduction to Hawaii is almost certainly recent. The record of *H. gramineum* from Baja California cited by Rodríguez Jiménez (1972, 1973) was based on a misidentification of a specimen of *H. peninsulare* Eastw. (see p. 40).

(c) *Principal clade (iv): subsect.* Knifa

The major disjunction between the areas of 1d. *H. rigidum* subsp. *bracteatum* (southern Brazil, Paraná) and the mostly closely related species in subsect. *Knifa*, 28. *H. relictum* (north-eastern Colombia, Santandér), immediately poses a problem. Because *H. relictum* is clearly at the dispersion centre of this geographically very diverse subsection, the migration from south of Amazonia that established its ancestor in the north-east Andean region must have occurred at a geologically remote time, at any rate not later than the early Tertiary. It could, therefore, not have used the Pleistocene Amazonian refugia (Prance, 1978), even if these had been ecologically appropriate.

The possible means of migration from south Brazil to north-east Colombia would seem, therefore, to be only two: long-distance dispersal (on birds) or gradually via the embryonic Andes. The intervening Amazonian cerrado and forest, as well as the drier vegetation of these areas in the Pleistocene, would seem to provide no ecologically appropriate vegetation in which *Hypericum* species could flourish on a direct migration route. In view of the varied history of the early páramo vegetation (protopáramo), in which *Hypericum* is known to have played a part (v.d. Hammen & Cleef, 1986: 175), the gradual migration along the proto-Andean foothills would seem more likely.

Having reached the northern Andes, the *H. relictum* group (Spp. 28, 29) gave rise to three derivative clades (vii–ix). Along the Cordillera in both directions (clade vii), 30. *H. thesiifolium* occurs from south-west Colombia to eastern Venezuela, and it also penetrates into Panama and Costa Rica. At higher altitudes, the distribution of the more reduced 31. *H. brevistylum* extends from south-west Colombia south to the Andes of Argentina. Apart from the usual gap in lowland Panama, none of these areas includes a disjunction.

Clade (viii), on the other hand, is based in central and north Mexico; and its precursors are likely to have reached there via the original, Great Antillean link between South America and the Yucatan-Belize region (see Robson, 1987: 9). Of the two divisions of clade (viii), the one based on 43. *H. pumillum* (clade xi) remains almost wholly in north and central Mexico apart from 44. *H. paucifolium*, which just extends its range into south-east Texas, and 47. *H. anagalloides*, which extends northwards in the western mountains as far as southern British Columbia. Its near relative (46. *H. parvulum*) occurs in Hawaii ('*H. degeneri*') as well as Mexico, but seems to be a recent arrival there.

The other division of clade (viii) (clade x) is based on 32. *H. pauciflorum* (west & south Mexico), from which three subsidiary clades are derived. Clade (xii) comprises a south-eastward development, with 33. *H. pratense* (extending as far as Nicaragua) and its derivatives 34. *H. philonotis* (south-eastern Mexico to Honduras) and 35. *H. aphyllum* (Belize). Clade (xiii) is an originally north-westward trend in which 36. *H. majus* evolved in north-west U.S.A. and Canada and then migrated eastward, the extreme eastern part becoming specifically distinct (37. *H. canadense*) and extending its area south in the eastern coastal region and back westward into the area of *H. majus* (c.f. Utech & Iltis, 1970). Both species have been introduced into Europe (relatively recently?), possibly by birds or (*H. majus*) human agency. Clade (xiv) is centred in south-eastern U.S.A. (38. *H. gymnanthum*) but has become very widely spread indeed. In 39. *H. mutilum* there is one (type) subspecies widespread in eastern North America, a north-eastern subspecies (39b. subsp. *boreale*), and a south-eastern subspecies (subsp. 39c. *latisepalum*). The Cuban endemic 40. *H. arenarioides* is very similar to a form of subsp. *latisepalum*. 39a. *H. mutilum* subsp. *mutilum* has undergone long-distance dispersal to Central America, the West Indies, South America (both north-west and south-east), Hawaii, New Zealand, Italy, France, and Transcaucasia (Georgia). How many of these introductions are by natural means (birds) is unclear, but some at least must have occurred in

geological time. Thus the eastern Brazil population, which was described as a separate species, *H. euphorbioides* A. St. Hil., has already speciated, giving rise to 41. *H. pleiostylum* with 5–8 styles. 38. *H. gymnanthum* itself has also undergone long-distance dispersal, to Guatemala, Poland, and east Asia. The trans-Pacific migration must have been relatively ancient, because *H. gymnanthum* no longer occurs there and the consequent 42. *H. japonicum* has had time to differentiate widely (though not, in my view, to subspeciate) and to spread throughout east and south-east Asia to Nepal, Sri Lanka, Australia, and New Zealand.

Finally, clade (ix) includes an ancient crossing of the Atlantic in a south-easterly direction. 48. *H. lalandii* is a very variable African species with a distribution that extends from the Cape of Good Hope to the Sudan Republic and Nigeria and into Madagascar. Its most primitive form occurs in Natal and the Transvaal, whence it appears to have radiated in all directions. Various forms of *H. lalandii* are almost indistinguishable from forms of 30. *H. thesiifolium* (Colombia) and 44. *H. paucifolium* (Mexico), the only apparent difference in the African species being the narrower, clavate stigmas. Its nearest relative would appear to be the north-west Colombian 28. *H. relictum*, a statement which again raises the question of how and when the migration from northern South America to south-eastern Africa occurred. It must, in my opinion, be ancient and therefore must have been achieved by natural means, i.e. by birds, or, less likely wind. There are no birds that migrate at present between Central or South America and southern Africa (Maclean, pers. comm., 1988). Some populations of water bird, however, that occur on both sides of the South Atlantic are still no more than subspecificaly distinct (e.g. the knob-billed duck *Sarkidiornis melanotis* or the grey-headed gull *Larus irrocephalus*, which is largely freshwater) or even show no subspecific variation whatsoever (the fulvous and white-faced ducks *Dendrocygnus bicolor* and *D. viduata* (Maclean, comm. cit.)). This variation pattern indicates that there must have been some interchange of water birds between the two landmasses within the last 20 000–30 000 years; and so there seems to be no reason to doubt that, some millions of years earlier, when Africa and South America were less distant than they are now, some south-eastward avian journey was responsible for introducing *Hypericum lalandii* into southern Africa.

From *H. lalandii* have evolved one species and one species group. In Madagascar the endemic 49. *H. globuliferum* is very similar to the form of *H. lalandii* from that island and probably resulted from local speciation there. The species group is centred in the East African mountains, where 50. *H. humbertii*, the species most closely related to *H. lalandii*, is endemic in the Ruwenzori and Virunga Mts area. 51. *H. scioanum* is both more specialized and more widespread, occurring from Ethiopia south to northern Malawi; and the most reduced species (in which there is again a return to flowers with 5 styles), 52. *H. oligandrum*, is confined to wet habitats in the Kalahari Sands region (Zambia, southern Zaire, Angola, Namibia – Caprivi).

(d) *Wide disjunctions: discussion*

From the above outline of evolutionary trends in sect. *Trigynobrathys*, it is clear that this section, unlike almost all others in *Hypericum*, includes wide disjunctions in distribution that cannot be explained either as vicarianism resulting from plate tectonics or as the result of gradual overland migration with intermediate extinction. The initial separation of the ancestral species in South America from their relatives in Africa can be attributed to the separation of continental plates; but, apart from the hypothetical migration of the *H. pauciflorum* group (Spp. 32–47) into Central America via the Greater Antilles land-bridge, the major disjunctions nearly all seem to involve long-distance dispersal.

Within the Americas, there are two examples of dispersal between south-eastern U.S.A. and temperate Brazil, one S–N (1. *H. rigidum*/10. *H. denticulatum*) and one N–S (39a. *H. mutilum* subsp. *mutilum*). Both migrations have been followed by speciation, unlike the N–S example of this disjunction in sect. *Brathys* (*H. gentianoides*), which is therefore likely to have been more recent. *H. mutilum* subsp. *mutilum* has also spread to Central America and the West Indies (Mexico, Honduras, Dominican Republic) and the northern Andes (Colombia, Ecuador, Peru) without subsequent speciation, and its close relative 38. *H. gymnanthum* (south-eastern U.S.A.) occurs also in Guatemala. The gap between 1d. *H. rigidum* subsp. *bracteatum* and 28. *H. relictum* could, as we have seen, been the result of either long-distance dispersal or gradual northward migration.

Of the Atlantic Ocean disjunctions, only one concerns the South Atlantic (28. *H. relictum* – 48. *H. lalandii*) and it is clearly the result of ancient dispersal. All the others involve Spp. 36–39, species of the eastern U.S.A. and Canada that have, along with *H. gentianoides* (sect. *Brathys*), 'turned up' in scattered localities in Europe and the Caucasus. Despite arguments to the contrary (see discussion under *H. canadense*, p. 113), I believe that all these species have appeared in Europe within the last *c.* 150 years, some probably as a result of carriage by birds, others possible being introduced accidentally by humans (cf. Bouchard, 1954).

There are also northern and southern trans-Pacific Ocean disjunctions. The southern one (25a. *H. silenoides* subsp. *silenoides* – 27. *H. gramineum*) is clearly due to ancient dispersal, almost certainly long-distance, as is one of the northern ones (38. *H. gymnanthum* – 42. *H. japonicum*). In both cases there has been subsequent speciation. Two others appear to be more recent in origin: 36. *H. majus* (northern U.S.A. or Canada – Japan) and 46. *H. parvulum* (northern Mexico – Hawaii). These may well be results of human activity; the occurrences of 39c. *H. mutilum* subsp. *mutilum* in New Zealand and Hawaii and of 27. *H. gramineum* in Hawaii almost certainly are.

It is always possible to attribute 'freak' distributions to the result of unusual winds 'sometime in the past'; but, while not denying that such causes and effects occur, I think that other explanations should be sought first. It is no doubt significant that the *Hypericum* section that contains most marsh and wet-margin herbs is just the one in which long-distance dispersal is conspicuously present. Mud containing seeds frequently becomes attached to feet or feathers of wading birds; and although migrating birds tend to travel clean, seeds and other propagules are undoubtedly sometimes transported for long distances (Ridley, 1930; v.d. Pijl, 1982; Carlquist, 1983). It seems reasonable, then, to suggest birds as the likely vehicles for carriage of the small seeds of damp-loving *Hypericum* species over long distances. Correlation of disjunctions with known avian migration routes (present or past) would go far towards verifying this hypothesis, though it seems too much to expect that a bird will be caught *in flagrante delicto*.

SYSTEMATIC TREATMENT

Sect. 29. **BRATHYS** (Mutis ex L.f.) Choisy, *Prodr. monogr. Hypéric.*: 38, 58 (1821).[3]

BASIC CHROMOSOME NUMBER (x): 12; ploidy 2 (correction to Part 7).

HABITAT. Add: high cold swamps (13. *H. callacallanum*, 16. *H. roraimense*); open woods, fields, roadsides, and waste places, 0–1040 m (87. *H. drummondii*, 88. *H. gentianoides*); open *Pinus* forest, grassy slopes, roadside, and ditches, often in damp places, 300–3000 m (79. *H. fuertesii*, 80. *H. dichotomum*, 81. *H. diosmoides*). 88 species (+ 12 subspecies).

DISTRIBUTION. Add: Nicaragua (82. *H. gnidioides*), Revilla Gigedo Islands (83. *H. eastwoodianum*), and south-eastern Brazil and Uruguay (10. *H. piriai*).

Key to sect. 29. *Brathys* (revised)

1 Leaves deciduous at base leaving rhombic scar, without interfoliar ridge; styles usually 5; flowers 15–70 mm in diam. (subsect. 1. *Styphelioides*) 2
Leaves deciduous at apparent base leaving crescentic or round scar with interfoliar ridge, or at least base persistent; styles 3(4) or, if 5, then flowers 4–10 mm in diam. 5

2(1) Leaves narrowly elliptic, acute, 16–30 mm long, chartaceous to subcoriaceous; sepals 14–22 mm long .... 1. **terrae-firmae**
Leaves narrowly obovate or, if oblong to elliptic, then acuminate or shorter (10–16 mm long) or thickly coriaceous; sepals 5–15 mm long (2. **styphelioides**) 3

3(2) Leaves narrowly elliptic to narrowly oblong, usually thinly coriaceous, spreading, often outcurving .... 2a. **styphelioides** subsp. **clarense**
Leaves oblanceolate to narrowly obovate, ± thickly coriaceous, ± densely imbricate, straight 4

4(3) Leaves with 7–11 basal veins, glands not prominent 2b. **styphelioides** subsp. **styphelioides**
Leaves with 5–7 basal veins, glands prominent .... 2c. **styphelioides** subsp. **moaense**

5(1) Leaves free, usually with apex of lower interfoliar stem line visible between bases 6
Leaves united, apex of lower interfoliar stem line obscured by interfoliar ridge 7

6(5) Inflorescence 1-flowered or, if flowers 2–25, then leaves completely revolute or only margin incurved; trees, shrubs, shrublets or rarely subshrubs or perennial herbs (subsect. 2. *Phellotes* p.p.) 8
Inflorescence (1)2–*c.* 40-flowered; leaves never completely revolute or only margin incurved; shrubs (rarely), subshrubs or wiry annual herbs (subsect. 4. *Spachium*) 88

7(5) Leaves persistent (deciduous with cortex) (subsect. 2. *Phellotes* p.p.) 8
Leaves deciduous above base or with whole stem internode (subsect. 3. *Brathys*) 44

8(6,7) Leaves deciduous (partly or apparently completely) without fading and/or with margin recurved to revolute and/or internodes with corky emergences 9
Leaves persistent (fading *in situ*, deciduous with cortex), margin plane to involute; internodes without corky emergences 20

9(8) Stem internodes with ± prominent lenticels or corky emergences; leaves deciduous at the apparent base or marcescent 10
Stem internodes smooth; leaves deciduous above base or persistent, not marcescent 15

10(9) Leaves becoming deflexed, marcescent; stem internodes almost smooth .... 3a. **phellos** subsp. **marcescens**
Leaves erect to spreading or, if becoming deflexed, then deciduous; stem internodes with prominent emergences 11

11(10) Leaves spreading to deflexing ... 3b. **phellos** subsp. **phellos**
Leaves remaining or becoming appressed, tetrastichous 12

12(11) Leaves with 3 basal veins (branched or not), sometimes spreading at first or deciduous, margin plane to recurved 13
Leaves with 1 basal vein (venation wholly pinnate), closely appressed, subpersistent, margin incurved 3d. **phellos** subsp. **platyphyllum**

13(12) Leaves deciduous .... 3c. **phellos** subsp. **oroqueanum**
Leaves persistent 14

14(13) Leaves with 3 unbranched basal veins; flowers 25–30 mm in diam.; styles 9–10 mm long, 4–6 × as long as ovary .... 4. **irazuense**
Leaves with at least midrib branched; flowers 15–27 mm in diam.; styles 5–9 mm long, 2–4 × as long as ovary .... 5. **stenopetalum**

15(9) Leaves completely revolute (lower surface obscured), linear, deciduous at apparent base or persistent 16
Leaves with margin plane to recurved or incurved (lower surface at least partly visible), elliptic to obovate-spathulate or linear, deciduous above base or persistent 18

16(15) Leaves deciduous, 4–10 mm long, elliptic-oblong to linear; sepals ovate to lanceolate; shrub to 3 m tall 8. **garciae**
Leaves persistent, (8-)10–40 mm long, linear; sepals narrowly lanceolate to linear or oblong; dwarf shrub to 0·8 m tall or subshrub or herb 17

17(16) Flowers solitary, inflorescence branching pseudodichotomous; flowers stellate; stamens not fasciculate; dwarf shrub .... 9. **acostanum**
Flowers 1–25, inflorescence branching monochasial; flowers obconic to pseudotubular; stamens 3(5)-fasciculate; subshrub or perennial herb .... 10. **piriai**

18(15) Styles 8–10 mm long; leaves 5–8 mm wide, plane or margin recurved, deciduous above base without twisting .... 22. **paramitanum**
Styles 3–6(–7) mm long; leaves 0·8–3 mm wide, subrecurved to incurved, persistent or deciduous above base after twisting 19

19(18) Leaves 3·5–5(–7) mm long, plane to subrecurved, midrib prominent beneath; flowers 8–13 mm in diam. .... 6. **carinosum**

[3]Including *Sarotha* L., Sp. pl.: 272 (1753), Gen. pl., 5th ed.: 13 (1754); *Hypericum* sect. *Perforaria* Choisy (1821), pro parte quoad *H. dichotomum* Lam.; *Martia* sensu Sprengel, *Syst. veg.* **3**: 333 (1826), pro parte quoad *H. dichotomum* Lam.; *Hypericum* sect. *Sarothra* (L.) Reichardt (1878); *Hypericum* sect. *Brathys* subsect. *Spachium* R. Keller (1893); *Sarothra* sect. *Spachium*(R. Keller) Y. Kimura (1951); *Sarothra* sect. *Spachium* series *Eusarothra* Y. Kimura (1951); *Hypericum* sect. *Spachium* (R. Keller) N. Robson; see Part 1 (Robson, 1977: 338).

Leaves 10–13 mm long, involute, midrib impressed beneath; flowers *c.* 25 mm in diam. ..... 7. **matangense**

20(8) Leaves plane (sometimes except base) or with margin or apex incurved, narrowly oblong or narrowly elliptic or narrowly lanceolate to elongate-linear, bases free or almost so (except in Sp. 12) 21
Leaves incurved or, if plane, then broadly oblong or ovate to subcircular, bases united 31

21(20) Leaves elliptic or narrowly oblong to oblanceolate-spathulate (1: b = 2·5–3·5), base cuneate or margin slightly recurved, with 3–7 basal or near-basal veins; styles 4·5–6 mm long 22
Leaves linear-lanceolate or linear-oblong or linear-elliptic to linear (1: b = 4–14), base parallel-sided or, if base narrowed, then margin slightly incurved; styles 1–4·6 mm long 23

22(21) Leaf surface smooth, ± lustrous, bases free or very shortly united; stigmas narrow ..... 11. **simonsii**
Leaf surface papillose, dull, bases united forming cup-shaped sheath; stigmas capitate ..... 12. **papillosum**

23(21) Leaves with base narrowly cuneate to angustate, narrowly oblong to narrowly elliptic, discolorous, margin usually slightly incurved 24
Leaves with base parallel-sided, or if slightly narrowed then elongate-linear to linear-oblanceolate, concolorous, plane or whole lamina incurved 25

24(23) Leaves with 3 basal or near-basal veins, midrib clearly branched; petals 9–11 mm long; inflorescence 1-flowered, branching pseudo-dichotomous ..... 13. **callacallanum**
Leaves 1-nerved, midrib not or obscurely branched; petals 6–8 mm long; inflorescence 1(3–12)-flowered, branching pseudo-dichotomous to dichasial/monochasial ..... 14. **humboldtianum**

25(23) Plant erect, bushy, 1-stemmed 26
Plant spreading or diffuse, stems rooting 30

26(25) Leaves broadest below middle, narrowly lanceolate to narrowly elliptic, 1·5–2·5 mm wide, base rounded-amplexicaul to cuneate ..... 15. **gladiatum**
Leaves broadest at or above middle, very narrowly elliptic or very narrowly oblanceolate-spathulate to linear, 0·5–1·8 mm wide, base cuneate or angustate to parallel-sided 27

27(26) Leaves chartaceous, spreading to reflexed from above base, apex acute to obtuse, cucullate, base ± sheathing 28
Leaves coriaceous, erect to gradually outcurving, apex sharply acute to acuminate, not cucullate, base plane to incurved but not sheathing 29

28(27) Leaves plane, acute, 6–13 mm long, margins straight, becoming reflexed from above base ..... 16. **roraimense**
Leaves incurved, apiculate to obtuse, 3–4·5 mm long, margin undulate, recurving or recurving-ascending from above base ..... 17. **sp.**

29(27) Leaves plane to subconduplicate, base parallel-sided to subangustate, glands prominent; stigmas broadly capitate; sepals triangular-lanceolate, 5-ribbed ... 18. **espinalii**
Leaves incurved at least towards base, base angustate, glands impressed; stigmas subcapitate; sepals triangular-linear, 3-ribbed ..... 19. **castellanoi**

30(25) Flowers 12–15 mm in diam.; sepals 6–7 mm long; leaves subacuminate, glands not prominent ..... 20. **asplundii**
Flowers *c.* 6 mm in diam.; sepals 3·5 mm long; leaves acute, glands prominent ..... 21. **radicans**

31(20) Leaves sessile, united by broad bases of laminae, often becoming deflexed 32
Leaves pseudopetiolate, united by bases of pseudopetioles, or sessile but base narrowed (Spp. 34,35), rarely becoming deflexed (Sp. 28 p.p.) 37

32(31) Flowers 18–40 mm in diam.; leaf base rounded to cordate-amplexicaul 33
Flowers 6–12 mm in diam.; leaf base parallel to truncate 35

33(32) Stem internodes smooth; leaves plane or slightly saccate, (2–)3–7 mm wide, margin not or scarcely hyaline ..... 23. **cuatrecasii**
Stem internodes with corky emergences, at least below upper leaves; leaves saccate or incurved-cucullate, 0·7–3·5 mm wide, margin markedly hyaline 34

34(33) Leaves becoming deflexed, saccate; sepals 5–8 mm long ..... 24. **goyanesii**
Leaves spreading only, incurved-cucullate; sepals 4–5 mm long ..... 25. **myricariifolium**

35(32) Leaves becoming deflexed, broadly ovate to triangular-ovate or (lower) oblong, basal veins 3(5) 26. **quitense**
Leaves erect or spreading only, triangular-ovate or oblong to linear, basal veins 1(3–5) (27. **loxense**) .. 36

36(35) Leaves broadly triangular-ovate to lanceolate, usually imbricate, base truncate to broadly cuneate ..... 27a. **loxense** subsp. **aequatoriale**
Leaves narrowly oblong or narrowly elliptic to oblanceolate or linear, usually spreading, base narrowly cuneate to parallel-sided ..... 27b. **loxense** subsp. **loxense**

37(31) Leaves sessile, lamina elliptic-oblong to narrowly oblong, base cuneate to parallel-sided 38
Leaves shortly petiolate or base angustate or, if base narrowly cuneate, then lamina linear to acicular .. 39

38(37) Leaves 5–7 mm long, elliptic or oblong to obovate; sepals 1·8–2·3 mm wide, apex plane ..... 34. **hartwegii**
Leaves 2–4 mm long, narrowly elliptic or narrowly oblong to linear; sepals 0·7–1·7 mm wide, apex incurved-cucullate ..... 35. **maguirei**

39(37) Leaves with midrib proximally prominent or wholly level with lamina; lamina conduplicate, apex usually acuminate to obtuse 40
Leaves with midrib proximally impressed; lamina incurved, apex usually obtuse to rounded 42

40(39) Leaves coriaceous, markedly tetrastichous, apex acuminate to acute, margin plane 41
Leaves chartaceous, weakly or not tetrastichous, apex acute to rounded, margin usually undulate .. 30. **thuyoides**

41(40) Leaves oblong or elliptic to lanceolate, 1·5–3 mm wide, imbricate or ± spreading; petals 13–16 mm long, bright yellow ..... 28. **lycopodioides**
Leaves narrowly lanceolate, appearing curved-acicular, 1–1·5 mm wide, recurved; petals *c.* 9 mm long, deep yellow ..... 29. **woodianum**

42(39) Leaves subpapillose beneath, base cuneate to pseudopetiolate; sepals obtuse to rounded ..... 31. **sabiniforme**
Leaves smooth beneath, base narrowly cuneate to angustate or parallel-sided; sepals acute to obtuse 43

43(42) Plant a bushy or spreading shrub or small tree (0·1)0·3–6 m tall; leaves with glands not or scarcely impressed; sepals usually plane ..... 32. **laricifolium**
Plant a pulviniform shrub 0·08–0·16 m tall; leaves with glands impressed; sepals markedly ribbed ... 33. **martense**

44(7) Leaves and sepals with conspicuous marginal glands that usually secrete clear or milky resin; lamina base ± sheathing 45
Leaves and sepals without conspicuous marginal glands, not sticky; lamina base not sheathing 48

45(44) Leaves ± abruptly spreading to deflexed above sheathing base, chartaceous, marcescent, elliptic to oblanceolate ..... 36. **magniflorum**
Leaves erect or gradually outcurving, usually coriaceous, deciduous above base, elliptic to circular 46

46(45) Leaves not glaucous, epidermis smooth, elliptic or oblanceolate to obovate; stigmas broadly capitate 47
Leaves densely glaucous, epidermis undulate-papillose, broadly elliptic to obovate-spathulate or circular; stigmas narrow ..... 39. **baccharoides**

47(46) Flowers solitary, 20–40 mm in diam., sometimes terminating clustered short shoots; leaves 7–10 mm long, always coriaceous; stems erect ..... 37. **gleasonii**
Flowers in 3–13-flowered cymes or, if solitary, less than 20 mm in diam.; leaves up to 17 mm long, sometimes chartaceous and then habit decumbent and rooting 38. **mexicanum**

48(44) Leaves sessile, apex cucullate, if 1-nerved then broadest above middle 49
Leaves shortly pseudopetiolate and/or apex not cucullate, if 1-nerved then broadest at or below middle 52

49(48) Leaves elliptic-ovate to elliptic-lanceolate, 3–7 mm broad, venation flabellate; flowers 25–40 mm in diam. ..... 40. **stuebelii**
Leaves oblanceolate to narrowly oblong, 0·7–3 mm broad, venation pinnate or 1-nerved; flowers 6–25 mm in diam. (petals unknown in 41. *prietoi*) 50

50(49) Sepals acuminate; leaves persistently imbricate-tetrastichous, markedly laterally compressed distally; stigmas capitate ..... 41. **prietoi**
Sepals acute; leaves eventually outcurving, not laterally compressed distally or, if so (42. *cassiopiforme* in part) then stigmas narrow 51

51(50) Petals *c.* 14 mm long; styles longer than ovary; stigmas narrow; leaves oblanceolate (1: b = *c.* 2·5) 42. **cassiopiforme**
Petals 5–9 mm long; styles 0·6–1 × as long as ovary; stigmas capitate; leaves narrowly oblanceolate to linear-elliptic (1: b = 4–11) ..... 43. **decandrum**

52(48) Leaves with venation flabellate, some laterals free or almost free from the base; styles stout, stigma usually capitate ..... 44. **pimeleoides**
Leaves with venation pinnate, all laterals originating well above the base, or 1-nerved; styles and stigmas various 53

53(52) Leaves petiolate or abruptly narrowed at the base or stem disarticulating 54
Leaves sessile, gradually narrowed or parallel-sided at the base; stem not disarticulating 63

54(53) Styles 6–7 mm long; flowers 25–30 mm in diam.; leaves often spreading abruptly above petiole .... 62. **jaramilloi**
Styles 0·8–5 mm long; flowers up to 25 mm in diam.; leaves outcurving or spreading from the base 55

55(54) Leaves with midrib prominent or level with lamina beneath, glands usually visible beneath 56
Leaves with midrib ± impressed beneath, glands not visible beneath 61

56(55) Stigmas broadly capitate; leaves glaucous, dull ..... 63. **cardonae**
Stigmas clavate or small; leaves not glaucous, lustrous 57

57(56) Leaves with margins slightly recurved to incrassate (64. **caracasanum**) 58
Leaves with margin or whole lamina incurved 59

58(57) Leaves 9 × 4–5 mm or larger; petals *c.* 1·3 × as long as sepals; styles *c.* 1·3 × as long as ovary ..... 64a. **caracasanum** subsp. **caracasanum**
Leaves 8 × 3·5 mm or smaller; petals 1·5–2 × as long as sepals; styles 2–2·5 × as long as ovary ..... 64b. **caracasanum** subsp. **turumiquirense**

59(57) Leaves elliptic to linear, petiolate or angustate, 3·5–11 mm long; stem not disarticulating 60
Leaves lanceolate-triangular, sessile, amplexicaul, 0·7–2 mm long; stem disarticulating at internodes 67. **millefolium**

60(59) Leaf lamina elliptic, 2–4 mm wide, plane with margin incurved; styles 5–6 mm long ..... 65. **ekmanii**
Leaf lamina narrowly elliptic to linear, 0·5–2 mm wide, incurved to canaliculate; styles 3·5–4 mm long ..... 66. **pycnophyllum**

61(55) Leaves plane or with margin subincrassate, narrowly ovate to narrowly oblong-elliptic; sepals 1·5–4 mm wide; styles 2·5–4 mm long ..... 68. **ruscoides**
Leaves incurved to canaliculate, elliptic or linear-lanceolate to linear; sepals 0·5–1·5 mm wide; styles 1–2(–3) mm long 62

62(61) Leaf lamina elliptic, 4–6 mm wide; stigmas narrow .. 69. **harlingii**
Leaf lamina linear-lanceolate to linear, 0·5–4 mm wide; stigmas broadly capitate ..... 73a. **lancioides** subsp. **lancioides**

63(53) Leaf and sepal apices ± incurved-cucullate; leaf lamina narrowly oblong or narrowly elliptic to linear, narrowed at base 64
Leaf and sepal apices not incurved or cucullate or, if so, then leaves broadened at the base 69

64(63) Ovary ellipsoid to globose; styles 0·8–2(–3) mm long, 0·4–1·1 × as long as ovary, stigmas ± broadly capitate; sepals usually oblong to oblanceolate, not ribbed 65
Ovary ovoid; styles *either* 3–4·5 mm long, 1·3–1·5 × as long as ovary, stigmas scarcely to narrowly capitate, *or* if styles shorter (1·5–2·5 mm long, 0·6–0·7 × as long as ovary) and broadly capitate, then sepals lanceolate, ribbed 67

65(64) Stems erect or rarely decumbent; leaves 7–15 mm long; sepals 5–8 mm long; styles 3(4), 1–2(–3) mm long (73. **lancioides**) 66
Stems prostrate or ascending; leaves 4–7 mm long; sepals 3–4 mm long; styles (3)4–5, 0·8–1 mm long 74. **selaginella**

66(65) Flowers terminal, solitary, inflorescence branching pseudo-dichotomous; habit bushy or caespitose ... 73a. **lancioides** subsp. **lancioides**

Flowers terminal and lateral in dense racemiform heads, all branching lateral; habit bushy or straggling ..... 73b. **lancioides** subsp. **congestiflorum**

67(64) Styles 3–4·5 mm long, 1·3–1·5 × as long as ovary; stigmas not or scarcely capitate; leaves 1·5–4 mm wide, margin not or scarcely hyaline 68
Styles 1·5–2·5 mm long, 0·6–0·7 × as long as ovary; stigmas broadly capitate; leaves 0·8–1·5 mm wide, margin narrowly but distinctly hyaline ..... 72. **andinum**

68(67) Sepals oblong-oblanceolate, not ribbed; leaves plane or with margin slightly incurved, 6–9 mm long, markedly tetrastichous, glaucous ..... 70. **llanganaticum**
Sepals ovate-lanceolate to oblong, ribbed; leaves with margin markedly incurved, 8–15 mm long, not or obscurely tetrastichous, lustrous ..... 71. **struthiolifolium**

69(63) Styles 6–7·5 mm long; flowers 20–30 mm in diam.; leaves with midrib branched, lamina elliptic to oblanceolate, plane or conduplicate, epidermis smooth ..... 45. **magdalenicum**
Styles up to 5 mm long; flowers up to 20 mm in diam.; leaves with midrib unbranched or, if branched, then lamina narrowly oblong or epidermis papillose above 70

70(69) Leaves markedly tetrastichous, narrowly elliptic, papillose above; branches very strict, parallel, with internodes 1–1·5 mm long ..... 56. **parallelum**
Leaves not tetrastichous or if so, then linear, smooth, and branches not as above 71

71(70) Sepal margin green or, if hyaline, then inflorescence a racemiform synflorescence and styles shorter than ovary with stigmas capitate 72
Sepal margin hyaline; inflorescence and styles not as above 81

72(71) Flowers solitary, not congested; styles 2·5–5 mm long, stigmas narrow 73
Flowers in congested heads or racemiform synflorescences; styles 1–3(–4·5) mm long, stigmas broadly capitate 79

73(72) Leaves 2–3 mm wide, narrowly elliptic, slightly incurved ..... 46. **valleanum**
Leaves 0·4–2 mm wide, very narrowly oblanceolate to linear, markedly incurved to conduplicate 74

74(73) Styles 2·5–3·5 mm long; leaves lustrous beneath 75
Styles 1–2 mm long; leaves dull beneath 78

75(74) Leaves becoming twisted, incurved but not carinate or conduplicate, margin very narrowly hyaline, dorsally usually glandular when mature 76
Leaves remaining erect or becoming recurved, incurved to conduplicate, often at least partly carinate, margin broadly hyaline, dorsally eglandular when mature 77

76(75) Sepals 7–11 mm long; flowers 20–30 mm in diam.; capsule *c.* 5 mm long; leaves 6–12 × 0·8–1·7 mm; stamens 60–75 ..... 47. **sprucei**
Sepals 4–7 mm long; flowers 10–18 mm in diam.; capsule 3·5–4 mm long; leaves 3·7–7 × 0·4–0·6 mm; stamens 30–55 ..... 48. **aciculare**

77(75) Leaves imbricate at first but not markedly tetrastichous, recurving, 5–8 mm long; flowers 15–20 mm in diam.; petals 8–12 mm long ..... 49. **recurvum**
Leaves densely and persistently imbricate, 'winged'-tetrastichous, scarcely spreading, 9–14 mm long; flowers 20–25 mm in diam.; petals 15–18 mm long 50. **wurdackii**

78(74) Flowers 15–20 mm in diam.; leaves 5–15 mm long, acute; stems woody, not rooting ..... 51. **costaricense**
Flowers 6–8 mm in diam.; leaves 3–5 mm long, subacute to obtuse; stems wiry, basally rooting ... 52. **bryoides**

79(72) Leaves very narrowly elliptic, 15 × 3 mm or larger; sepals 9–11 mm long, coriaceous; styles *c.* 4·5 mm long ..... 53. **bolivaricum**
Leaves linear, up to 14 × 1·5 mm; sepals 2–7 mm long, chartaceous to membranous; styles 0·6–3 mm long 80

80(79) Stems erect to decumbent; leaves 6–14 mm long; styles 1·5–3 mm long, shorter to longer than ovary 54. **juniperinum**
Stems prostrate; leaves 2–5 mm long; styles 0·6–0·8 mm long, shorter than ovary ..... 55. **prostratum**

81(71) Leaves lustrous, margin markedly incurved, lamina twisting and sometimes recurving (57. **marahuacanum**) 82
Leaves dull or with metallic sheen, margin plane to incurved, lamina incurved only 84

82(81) Stigmas small or slightly enlarged; ovary and capsule acute; inflorescence branching pseudo-dichotomous or racemiform 83
Stigmas enlarged to capitate; ovary and capsule ± rostrate; inflorescence branching pseudo-dichotomous to lateral-congested ..... 57c. **marahuacanum** subsp. **chimantaicum**

83(82) Styles 4–5 mm long; sepals 7–9 mm long; inflorescence branching pseudo-dichotomous ..... 57a. **marahuacanum** subsp. **marahuacanum**
Styles 2–3(–4) mm long; sepals 4–5 mm long; inflorescence branching lateral, racemiform ..... 57b. **marahuacanum** subsp. **strictissimum**

84(81) Leaves plane or slightly incurved, oblong-linear or narrowly oblanceolate, the tips not red when young 58. **lancifolium**
Leaves markedly incurved to canaliculate, linear to linear-acicular, the tips usually red when young ... 85

85(84) Plant a prostrate shrublet with branches matted, rooting; leaves often secund, not tetrastichous .... 59. **horizontale**
Plant an erect shrub with branches strict, not rooting; leaves never secund, usually ± tetrastichous 86

86(85) Leaves with metallic sheen, marked tetrastichous, erect to suberect ..... 60. **tetrastichum**
Leaves dull, not tetrastichous (except sometimes in young parts or young plants), usually outcurving (61. **strictum**) 87

87(86) Leaf and sepal apices acicular; sepals 1·3–2 mm wide, not ribbed; leaves 8–13 mm long; branches strict, usually all from one stem .. 61a. **strictum** subsp. **strictum**
Leaf and sepal apices subacute; sepals 1–1·2 mm wide, clearly ribbed; leaves 5–7(8) mm long; branches ascending, usually branched from the base ..... 61b. **strictum** subsp. **compactum**

88(6) Leaf venation parallel, 5–7-nerved; stigmas narrow; shrub ..... 75. **cymobrathys**
Leaf venation pinnate and/or 1–3-nerved; stigmas capitate to peltate; subshrubs to annuals 89

89(88) Leaves pseudopetiolate or subsessile, with 2–4 pairs of lateral veins, ovate or elliptic to narrowly oblong or oblanceolate (1: b = 2–4) (76. **chamaemyrtus**) .. 90

Leaves sessile, without or with 1 pair of lateral veins, lanceolate or narrowly elliptic-oblong to linear to linear-subulate (1: b = 6–12) 91

90(89) Inflorescence pseudo-dichotomous with ultimate branches dichasial/monochasial; leaves pseudo-petiolate, lamina base broadly cuneate to rounded ..... 76a. **chamaemyrtus** subsp. **chamaemyrtus**
Inflorescence wholly pseudo-dichotomous; leaves subsessile, lamina base narrowly cuneate to angustate .... 76b. **chamaemyrtus** subsp. **pseudocaracasanum**

91(89) Styles 4–5 mm long or, if shorter, then inflorescence branching wholly pseudo-dichotomous; plant a subshrub, shrublet or perennial herb 92
Styles 0·6–3 mm long; inflorescence branching wholly dichasial/monochasial or mixed; plant a subshrub or perennial or annual herb 96

92(91) Styles 4–5 mm long; plant a subshrub or shrublet, erect or decumbent, but not rooting; inflorescence branching various 93
Styles 0·5–3 mm long; plant a shrublet or perennial herb, erect to prostrate and rooting; inflorescence branching wholly pseudo-dichotomous/sympodial 94

93(92) Sepals 4·5–10 mm long, exceeding capsule; bracts foliaceous; inflorescence branching mixed or wholly pseudo-dichotomous; terminal stem-internodes not relatively elongate ..... 77. **arbuscula**
Sepals 3·5–4·2 mm long, shorter than capsule; bracts linear-subulate; inflorescence branching dichasial/monochasial; terminal stem-internodes relatively elongate ..... 78. **rubritinctum**

94(92) Leaves linear or very narrowly oblong to oblanceolate, plane or incurved, acute; styles 2·5–3 mm long ..... 79. **fuertesii**
Leaves oblong-elliptic or oblong-spathulate to oblanceolate or obovate, plane to revolute, subacute to rounded; styles 0·5–2·5 mm long 95

95(94) Leaf margin plane; petals *c.* 1·5 × as long as sepals; styles 1·5–2·5 mm long ..... 80. **dichotomum**
Leaf margin recurved to revolute; petals about equalling sepals; styles 0·5–1(1·5) mm long ..... 81. **diosmoides**

96(91) Inflorescence branching at least partly pseudo-dichotomous; capsule nearly always shorter than sepals; leaves acute to subacute ..... 82. **gnidioides**
Inflorescence branching wholly dichasial/monochasial; capsule (unknown in Sp. 84) exceeding or equalling sepals or, if shorter, then leaves obtuse or rounded 97

97(96) Plant a shrublet or ericoid subshrub or perennial herb; leaves 1–6·5 mm broad, if appressed then margin not entire 98
Plant an annual herb; leaves 0·4–1 mm broad, appressed, margin entire 101

98(97) Capsule shorter than to slightly exceeding sepals, usually ellipsoid or cylindric-ellipsoid; leaves coriaceous to thickly chartaceous with margin usually entire 99
Capsule 2–3 times as long as sepals, narrowly ovoid-cylindric *or* leaves thinly chartaceous with margin undulate-denticulate 100

99(98) Styles shorter than ovary; stem branched above base only; inflorescence usually rather dense; subshrub or shrublet ..... 83. **eastwoodianum**
Styles longer than ovary; stem usually with geniculate branches from base; inflorescence rather lax to very lax; subshrub or perennial herb ..... 84. **peninsulare**

100(98) Leaves thinly chartaceous, becoming deflexed, margin undulate-denticulate ..... 85. **beamanii**
Leaves coriaceous, appressed, margin retrorse-denticulate ..... 86. **galinum**

101(97) Leaves linear-lanceolate to linear-subulate, 5–22 mm long, margin revolute to subincurved; sepals 3–7 mm long; capsule about equalling sepals ..... 87. **drummondii**
Leaves canaliculate to scale-like, 1–4 mm long, margin incurved; sepals 1·5–2·5 mm long; capsule 2–3 × as long as sepals ..... 88. **gentianoides**

Subsect. 1. **Styphelioides** N. Robson, **subsect. nov.**

Arbores parvae vel frutices. *Folia* libera, sessilia, plana vel plusminusve incurva, apice interdum concava, 5–11-nervia, venatione parallela vel subparallela vel flabellata, basi decidua cicatricem rhombicum relicta. *Inflorescentia* 1-flora ramificatione pseudo-dichotoma vel laterali. *Flores* 15–70 mm in diameter, stylis 5 vel raro 4–3. Typus: *H. styphelioides* A. Rich. (Species 1–2).

1. **Hypericum terrae-firmae** Sprague & Riley (Part 7: 18; No. 1).

2. **Hypericum styphelioides** A. Rich. (Part 7: 20; No. 2).

2a. subsp. **clarense** Lippold; 2b. subsp. **styphelioides**; 2c. subsp. **moaense** Lippold.

Icon: Léon & Alain, *Fl. Cuba* **3**: 316, f. 141 (1953).

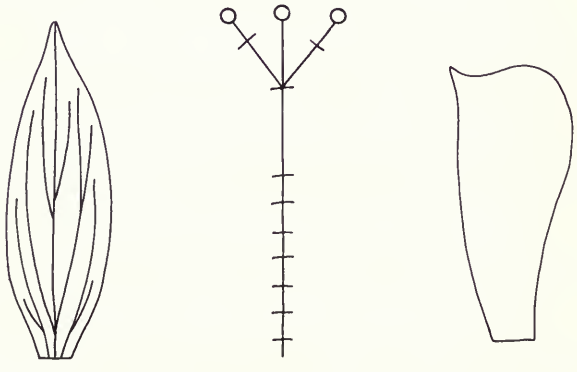
Subsect 2. **Phellotes** N. Robson, **subsect. nov.**

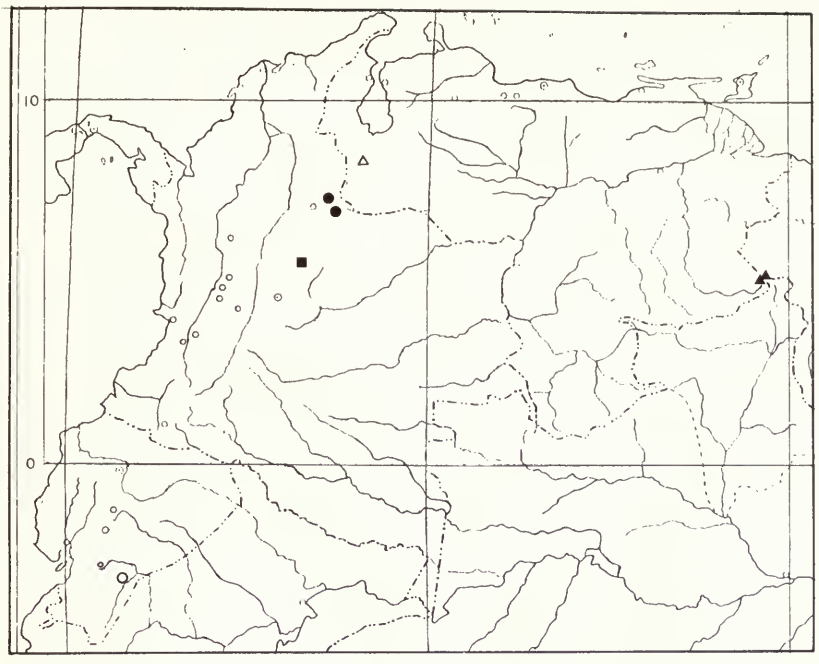
Arbores parvae vel frutices vel fruticuli vel raro suffrutices vel herbae perennes. *Folia* libera vel binatim conjuncta, sessilia vel rariore breviter pseudopetiolata, plana vel margine recurva vel incurva vel omnino revolutà vel incurva vel involuta, apice interdum concava vel cucullata, 1–7-nervia venatione pinnata vel simplici, ut videtur basi decidua cicatricem lunarem vel circularem relicta vel omnino persistentia et interdum marcescentia vel rarissime supra basin decidua (Sp.3). *Inflorescentia* 1(2–5)-flora ramificatione pseudo-dichotoma vel laterali vel (–15)-flora ramificatione cymosa (Sp.14). *Flores* 5–30 mm in diameter, stylis 3 vel raro 4. Typus: *H. phellos* Gleason (Species 3–35).

3. **Hypericum phellos** Gleason (Part 7: 23; No. 3)

3a. subsp. **marcescens** N. Robson, **subsp. nov.**

Map 1.





Map 1 Sect. 29: 3a. *H. phellos* subsp. *marcescens* ●; 7. *H. matangense* ○; 15. *H. gladiatum* ■; 16. *H. roraimense* ▲; 17. *H.* sp. △.

Hypericum phellos subsp. *phellos*, variant 3a (i) (Part 7: 25).

Caulis internodii eminentia suberosa vix prominentes instructi. *Folia* deflexescentia et marcescentia ante cadentia, margine recurva, basi 3–7-nervia.

Type: Colombia, Santandér, vicinity of La Baja, 2700 m, 14–31 January 1927 (fl), *Killip & Smith* 18756 (GH!-holotype; GH!, NY!, US!-isotypes).

Colombia (Santandér).

COLOMBIA. Santandér: vicinity of Vetas, 3100–3250 m, 16–20 January 1927 (fl & fr), *Killip & Smith* 17255 (GH, NY); above California, gold-mining valley, 2700–2900 m, 14 September 1985 (fl and fr), *Wood* 5062 (K).

3b. subsp. **phellos** (Part 7: 23; No. 3a, variants (ii)–(vi)).
Caulis internodii eminentia suberosa plusminusve prominentes instructi. *Folia* patentia vel deflexescentia ante cadentia sed non marcescentia, margine recurva vel plana, basi 3-nervia.

3c. subsp. **oroqueanum** N. Robson (Part 7: 25; No. 3b).
Caulis internodii eminentia suberosa plusminusve prominentia instruci. *Folia* ad caulem continue adpressa ante cadentia margine plana, basi 3-nervia.

3d. subsp. **platyphyllum** (Gleason) N. Robson (Part 7: 25; No. 3c).
Caulis internodii eminentia suberosa satis prominentia instructi. *Folia* ad caulem continue adpressa, persistentia, margine recurva vel plana vel incurva, basi 1-nervia.

4. **Hypericum irazuense** Kuntze ex N. Robson (Part 7: 30; No. 7).
Correction to Part 7: 30: Chromosome number of *H. irazuense* is 2n = 24, not 2n = 12.

5. **Hypericum stenopetalum** Turcz. (Part 7: 31; No. 8).

6. **Hypericum carinosum** R. Keller (Part 7: 33; No. 9).
Delete Venezuelan record *Gehringer* 149 (VEN), see p. 22.

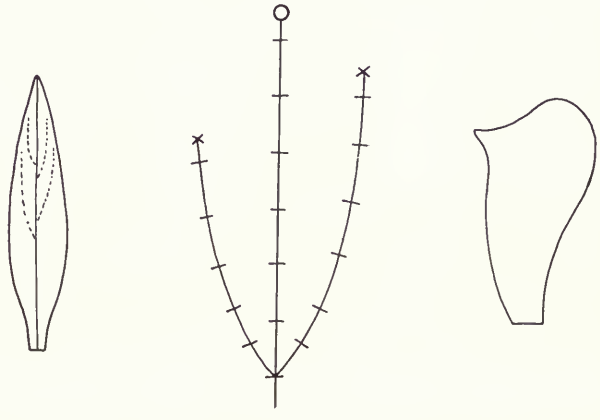
A collection from Santandér ('about 6 km E. of Cerrito, 3000 m, 5 April 1984', *Wood* 4335 (K)) extends the range of variation of this species sufficiently to warrant modification to the description in Part 7. Some or all of these variations may be the result of the damp habitat: 'On a scrubby bank between potato fields, growing near where an irrigation ditch flows down the slope'.

Shrub . . ., erect or with drooping branches, . . . *Stems* . . . internodes 2–20 mm long. *Leaves* sessile or pseudopetiolate with petiole up to 1 mm long, spreading to reflexed from the base or above the pseudopetiole, . . . lamina 3·5–7 × 0·8–3 mm, narrowly elliptic or narrowly oblong to obovate-spathulate, plane or subrecurved, apically subconcave when small, markedly carinate or with midrib only slightly prominent beneath, concolorous, slightly to markedly glaucous, chartaceous to subcoriaceous; apex acute to apiculate or rounded, . . . *Inflorescence* (etc.) as before.

7. **Hypericum matangense** N. Robson, **sp. nov.**

Map 1.

H. phelloti subsp. *marcescenti* N. Robson affinis, sed caulibus gracilioribus, foliis angustioribus involutis discoloribus torquescentibus semper uninervis nervi ramis et venatione



reticulata indistinctis, inflorescentia uniflori, staminibus paucioribus, stylis brevioribus, differt. Type: Ecuador, Morona-Santiago, Páramo de Matanga, Sigsig–Gualaquiza road, 3000 m, 14 December 1980 (fl), *Holm-Nielsen, Jaramillo & Coello* 29401 (AAU!-holotype).

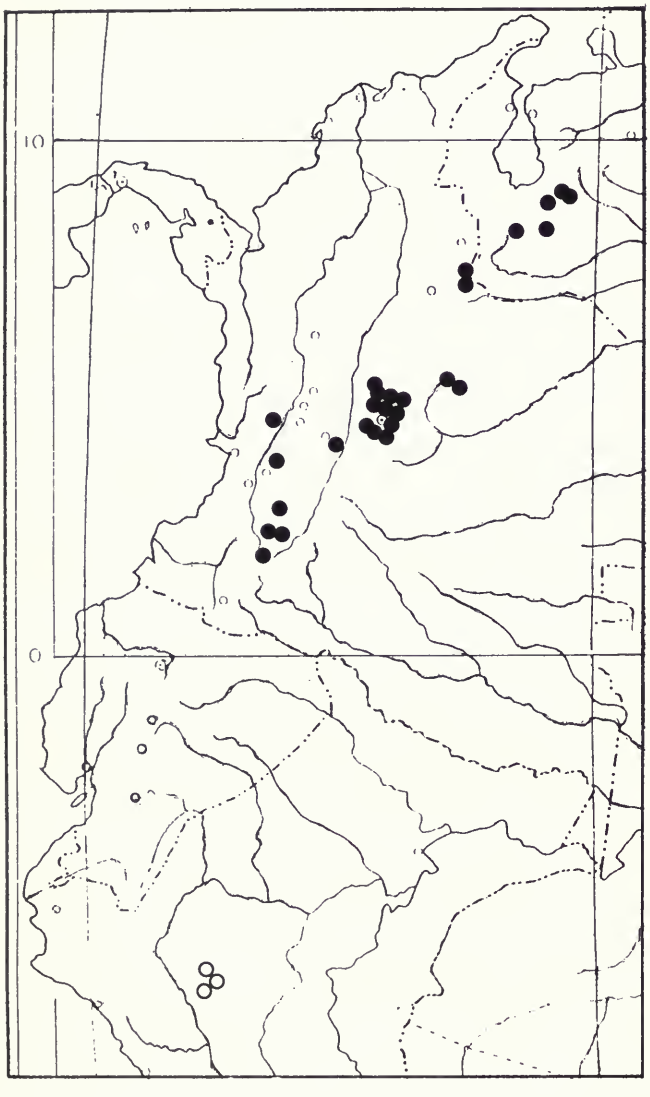
Shrub 0·8 m tall, erect, with branches strict, lateral. *Stems* orange-brown, 4-lined and ancipitous when young, eventually terete, cortex exfoliating in strips; internodes 2–4 mm long. *Leaves* sessile, spreading from above base, twisting, not tetrastichous ?, persistent or sometimes deciduous (breaking off) above base (usually near point of flexure) after fading; lamina 10–13 × 1·1–3 mm, oblanceolate (lower) to linear, involute, not cucullate or carinate, dull ferrugineous above, lucent beneath, not glaucous, subcoriaceous to chartaceous; apex acute, base parallel, not or loosely sheathing, free or united with stem-line apex to form very narrow interfoliar ridge; basal vein 1, impressed beneath, with obscure ascending branches and dense tertiary reticulation; laminar glands dense, visible on both sides, slightly impressed. *Inflorescence* 1-flowered, terminal and on lateral branches; pedicel *c.* 2–3 mm long, slightly incrassate upwards; upper leaves foliose. *Flowers c.* 25 mm in diam., stellate. *Sepals* 9 × 1·5–2 mm, linear-oblong, acute; veins 3, unbranched ?, not prominent. *Petals* bright? yellow, 18 × *c.* 5 mm, *c.* 2 × sepals, oblanceolate; apiculus acute; glands linear, distally punctiform. *Stamens c.* 50, longest 9 mm long, *c.* 0·5 × petals. *Ovary* 4 × 2 mm long, ovoid-pyramidal; styles slightly longer than ovary, proximally suberect, distally divergent-incurved; stigmas slightly enlarged. *Capsule* and *seeds* not seen.

In scrub páramo; 3300 m.

Ecuador (Morona-Santiago).

ECUADOR. Morona-Santiago: Páramo de Matanga, Km 36 on road Sigsig–Gualaquiza (old muletrack), E. of the pass, 3300 m, 14 December 1980 (fl), *Holm-Nielsen, Jaramillo & Coello* 29401 (AAU).

H. matangense is known as yet from only one collection, but it is clearly related to *H. phellos* subsp. *marcescens* from northern Colombia (Santandér) although more specialized in all characters. Thus the leaves are much narrower and involute-twisted, not plane to apically subconcave, and distinctly discolorous; and the bases are loosely appressed to the stem. The flowers are solitary (in the single known specimen).



Map 2 Sect. 29: 13. *H. callacallanum* ○; 14. *H. humboldtianum* ●.

8. **Hypericum garciae** Pierce (Part 7: 26; No. 4).

9. **Hypericum acostanum** N. Robson (Part 7: 27; No. 5).

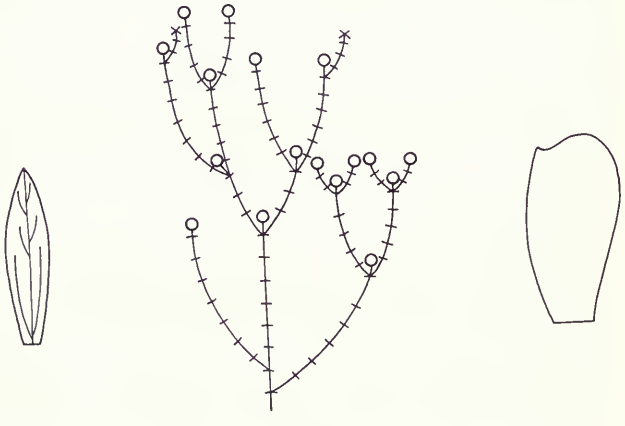
10. **Hypericum piriai** Arechav. (Part 7: 28; No. 6).
Icon: Lyman B. Smith in *J. Wash. Acad. Sci.* **48**: 312, f. 1n–p (1958); Rodríguez Jiménez in Reitz, *Fl. Ill. Catar., Hipericác.*: 6, t.1B (1980).

11. **Hypericum simonsii** N. Robson (Part 7: 34; No. 10).
N.B. The type locality of this species is Maldonado, not Mardonado as in Part 7: 28–29.

12. **Hypericum papillosum** N. Robson (Part 7: 34; No. 11).

13. **Hypericum callacallanum** N. Robson, **sp. nov.**

Fig. 7A, Map 2.



H. simonsii N. Robson affinis, sed habitu humiliore, foliis angustioribus apice acutis, e basi uninervatis costa media fere in baso et supra ramosa, sepalis angustioribus apice acutis, petalis minoribus, stylis brevioribus, capsula minore, differt. Type: Peru, Amazonas, Chachapoyas, Cerros Calla-Calla, 29–30 km above Leimebamba on road to Balsas, Km 401, 3450–3500 m, 16 October 1964 (fl), *Hutchinson & Wright* 7003 (K!-holotype; F!, MICH!, MO!, NY!, US!-isotypes).

Fig. 7 A. *H. callacallanum*: (a) habit; (b) stem with leaves; (c) leaf; (d) sepal; (e) petal; (f) stamens (partly cut away) and ovary; (g) capsule. B. *H. asplundii*: (h) habit; (i) stem base with roots; (j) stem with leaves; (k) leaf; (l) sepal; (m) petal; (n) stamens (partly cut away) and ovary; (o) young capsule (a, h × ½; b, i, j, × 2; c–g, k–o × 4). A. *Hutchinson & Wright* 7003; B. *Asplund* 17089.

Shrub 0·2–0·5 m tall, erect, bushy, with branches strict to ascending, pseudo-dichotomous and lateral. *Stems* orange-brown, 4-lined but scarcely ancipitous when young, eventually subterete, cortex exfoliating in strips; internodes 2–8 mm long. *Leaves* sessile, spreading from above base to appressed, persistent until brown, sometimes subsequently deciduous above base; lamina 8–13 × 2–3 mm, very narrowly oblong to very narrowly elliptic, plane or slightly conduplicate, not carinate or glaucous, concolorous, chartaceous; apex acute, base narrowly cuneate to parallel, not sheathing, united with stem-line apex to form narrow interfoliar ridge; basal vein 1 with 2(3) basal or near-basal branches, midrib branching above, tertiary reticulation not visible; laminar glands rather dense, impressed above, sparser beneath. *Inflorescence* 1-flowered, terminal and on short lateral or pseudo-dichotomous shoots; pedicel 3–6 mm long; upper leaves not transitional. *Flowers c.* 20 mm in diam., stellate. *Sepals* 6–8 × 1·3–2 mm, rather broadly to narrowly oblong or elliptic-oblong to oblanceolate, acute, distally curved; veins 5, unbranched, midrib not prominent, glands striiform and punctiform. *Petals* bright yellow, 9·5–11 × 3·6–4·5 mm, *c.* 1·5 × sepals, obovate-oblanceolate; apiculus acute; glands striiform and punctiform. *Stamens* 50–60, longest 6–7 mm long, *c.*0·7 × petals. *Ovary c.*2·5 × 1·8 mm, ovoid-ellipsoid; styles 3, *c.*3 mm long, 1·2 × ovary, suberect to spreading, distally incurved; stigmas narrowly capitate. *Capsule c.* 5 × 2 mm, ovoid-cylindric, shorter than sepals. *Seeds c.* 1 mm long, not or slightly carinate; testa very finely scalariform-reticulate.

In open exposed habitats ('cold swamp' – *Wurdack*); 3000–3700 m.

Peru (Amazonas). Apparently confined to the Cerros Calla-Calla region.

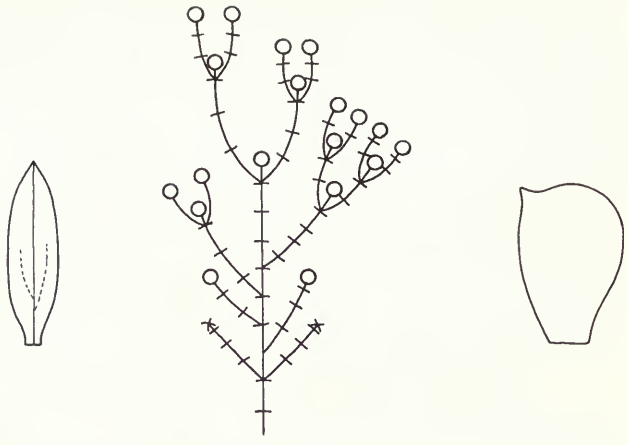
PERU. Amazonas: Chachapoyas, summit of Cerros Calla-Calla between Leimebamba-Balsas road pass and Herredura road, 3500–3700 m, 8 July 1962, (fl & fr), *Wurdack* 1230 (NY, US); Chachapoyas, Balsas-Leimebamba road, KM 400, 3200 m, 4 June 1977 (fl), *Boeke* 1920 (BM, NY n.v.); Chachapoyas, Piscohuañuna Pass, 3000 m, August 1938 (fl), *Sandeman* 19 (K).

H. callacallanum, along with 14. *H. humboldtianum*, forms a sister group to Spp. 15–21 and is more westerly in origin than the latter. It is markedly disjunct from its nearest Colombian relative in that group, which is in Boyacá (15. *H. gladiatum*). 20. *H. asplundii*, from Ecuador, is intermediate geographically between these taxa; but it is morphologically more advanced in most characters than *H. callacallanum* and is more closely related to *H. gladiatum*. For the differences between *H. callacallanum* and *H. humboldtianum* see p. 21.

14. **Hypericum humboldtianum** Steudel, *Nomencl. bot.* 2nd ed. **1**: 788 (1840). Type: Colombia, Cundinamarca, prope Santa Fe de Bogotá?, June–September 1801 (fl & fr), *Humboldt & Bonpland* (P-HUM!-holotype; P-isotype; US!-photograph).

Map 2.

H. thymifolium Kunth in Humb., Bonpl. & Kunth, *Nov. gen. sp.* **5**: 186, t. 455 (1822); Choisy in DC., *Prodr.* **1**: 550 (1824); Triana & Planchon in *Annls Sci. nat.* (Bot.) IV, **18**: 297 (1862), pro parte excl. syn. Trevir.; R. Keller in *Bull. Herb. Boissier* II, **8**: 177 (1908), in Engl. & Prantl, *Nat. Pflanzenfam.* 2nd ed. **21**: 181 (1925); Gleason in *Bull. Torrey bot. Club* **56**: 103 (1929); non Banks & Sol. (1794). Type as for *H. humboldtianum*.



Brathys thymifolia (Kunth) Spach, *Hist. nat. veg.* **5**: 448 (1836), in *Annls sci. nat.* (Bot.) II, **5**: 366 (1836).

H. jussiaei Planchon & Linden ex Triana & Planchon in *Annls. Sci. nat.* (Bot.) IV, **18**: 297 (1862); R. Keller in *Bull. Herb. Boissier* II, **8**: 178 (1908); in Engl. & Prantl, *Nat. Pflanzenfam.* 2nd ed. **21**: 181 (1925); Gleason in *Bull. Torrey bot. Club* **56**: 103 (1929). Types: Colombia, Cundinamarca, Cordillera de Bogotá, 2900 m, 1855 (fl), *Triana* s.n. (P!-lectotype); Cundinamarca, páramo de Fortunato, 2870 m, 1842? (fl), *Linden* s.n. (BR, G-syntypes).

H. jussiaei var. *saturejifolium* R. Keller in *Bull. Herb. Boissier* II, **8**: 181 (1908) ['satureiaefolium']. Type: Colombia, Cundinamarca, Cordillera de Bogotá, 3000 m, [1855?] 1851–57 (fl), *Triana & Linden* s.n. (W!-holotype; K!, NY!-isotypes).

H. dichotomum Kunth ex R. Keller in *Bot. Jb.* **42**: 130 (1908). Type: Ecuador, Loja, Saraguro, July–August (1802), *Humboldt* (B-holotype; F!, US!-photographs).

Icon: Humb., Bonpl. & Kunth, *Nov. gen. sp.* **5**: t.455 (1822).

Shrub or shrublet (0·05–) 0·1–0·75 m tall, erect or decumbent at the base to ascending, with branches pseudo-dichotomous and divergent or lateral and strict, sometimes condensed in leaf axils, not from the base. *Stems* orange-brown, 4-lined and ancipitous when young, eventually terete, cortex exfoliating in strips; internodes 2·5–14 mm long. *Leaves* sessile or shortly pseudopetiolate with pseudopetiole up to 0·5 mm long, spreading from above pseudopetiole to subappressed, not tetrastichous, deciduous above base or above pseudopetiole before fading; lamina 6–13 × 1·2–3 mm, narrowly oblong or narrowly elliptic to oblanceolate, plane or ± incurved, not or slightly cucullate, midrib slightly prominent to impressed beneath, concolorous, sometimes glaucous, coriaceous or subcoriaceous; apex acute to obtuse, not mucronate, base angustate, the pseudopetiole sheathing, free or united with stem-line apex to form narrow interfoliar ridge; basal vein 1, without or with obscure lateral branches, tertiary reticulation absent; laminar glands ± dense, impressed above. *Inflorescence* 1(3–12)-flowered, the branching dichasial or pseudo-dichotomous or mixed; peduncle and pedicels 3–4(–7) mm long, not incrassate upwards; upper leaves transitional. *Flowers c.*15 mm in diam., stellate. *Sepals* 14·5–16·5 × 1·3–2·2 mm, elliptic-oblong to oblanceolate, acute; veins 3–5, not branched, midrib not prominent; glands linear below and punctiform in upper ⅓–½ or wholly punctiform. *Petals* bright

yellow, 6–8 × 3–5·5 mm, *c.*1·3 × sepals, obovate; apiculus obtuse; glands linear, distally punctiform. *Stamens* 30–50, longest *c.*5·5 mm long, 0·6–0·7 × petals. *Ovary* 1·5–2 × 1 mm, ovoid to cylindric; styles 3, 2–3 mm long, 1–1·5 × ovary, narrowly spreading; stigmas broadly capitate. *Capsule* 4–6·5 × 2–3 mm, cylindric-ellipsoid, equalling sepals. *Seeds* 0·5–0·6 mm long, ecarinate; testa finely reticulate-scalariform.

Thickets and open slopes of the páramo; (1820) 2500–3500 m.

Colombia (Valle de Cauca to Norte de Santandér), Venezuela (Mérida).

COLOMBIA. Antioquía: San José de Cuerquia, 30 July 1958 (fl), *de Garganta* 2145 (US). Boyacá: Municipio de Tota, peninsula de Suse, alredores de Lago de Tota, 3050 m, January 1976 (fl), *Aguirre & Rangel* 411 (COL). Caldas: Cordillera Central, old Quindío trail, 'Laguneta' to 'Magaña', 3000–3200 m, 1 August 1922 (fl), *Killip & Hazen* 9463 (GH, K, NY). Cauca: environs of Puracé, Tablón, 2700–2800 m, 22 July 1943, *Cuatrecasas* 14533 (F). Cundinamarca: Páramo de Guasca, 2940 m, 15 December 1938 (fl), *Balls* 5701 (BM, COL, F, K); Bogotá to Choachí, Km 15, Páramo de Cruz Verde, 3000 m, 9 August 1974 (fl), *Grabandt & Idrobo* 317 (COL). Norte de Santandér: Páramo de Fontibón, 2600–2750 m, 15 October 1941 (fl), *Cuatrecasas*, *Schultes & Smith* 12283 (COL); environs of Pamplona, 10 October 1963 (fl), *de Garanta* 625 (F). Valle: Cordillera Central, W. slope, río Bugalagrande, Barragán, cerro de La Laguna, 2920–2950 m, 17 April 1946 (fl), *Cuatrecasas* 20836 (F).

VENEZUELA Mérida: between La Cumbre, San José and Mucutuy, 1820–2590 m, 3 May 1944 (fl & fr), *Steyermark* 56258 (F, NY).

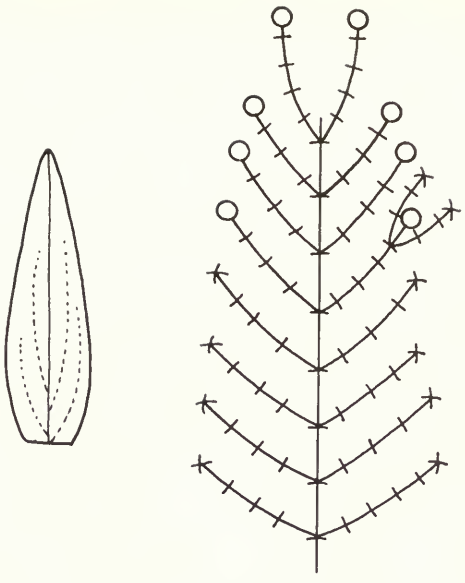
H. humboldtianum varies continuously north-eastward from typical '*H. thymifolium*' (Cundinamarca, Cauca, Valle), with spreading leaves, no axillary branchlets, few or no lateral branches, and a 1-flowered pseudo-dichotomous inflorescence, to '*H. jussiaei* var. *saturejifolium*' (Cundinamarca to Mérida), with appressed leaves, axillary branchlets, numerous lateral branches, and 3–12-flowered dichasial inflorescences.

Its nearest relative would appear to be *H. callacallanum* (Peru), which is more bushy and has 3(4)-nerved sessile leaves and larger flowers.

Kunth's *H. dichotomum*, was based on a Humboldt specimen that is labelled as having been collected in 'Saraguru' (i.e. south Ecuador, Loja, Saraguro). This name remained unpublished (probably because Kunth realized that it would be a later homonym of *H. dichotomum* Lam.) until Keller discovered a specimen so named in Herb. Humboldt (B) and described it. The photographs of this specimen show that it clearly belongs to the '*H. jussiaei*' form of *H. humboldtianum*, not (as the cited locality suggests) to near *H. callacallanum*. Since no further material of this species has been collected in the botanically relatively well known Saraguro area, and since the species is otherwise unknown south of south-central Colombia, it seems possible that Keller was in error in localizing the Berlin specimen and that the plant was actually collected in Colombia by Humboldt & Bonpland. At any rate, the occurrence of *H. humboldtianum* in Ecuador must, for the present, remain extremely doubtful.

15. **Hypericum gladiatum** N. Robson, **sp. nov.**

Map 1.



H. simonsii N. Robson affinis, sed foliis angustioribus 1– vel raro 3-nervatis apice acutis, sepalis brevioribus angustioribusque apice acutis, staminibus paucioribus (circa 60), stylis brevioribus (circa 3 mm longis), differt. Type: Colombia, Boyacá, Arcabuco, alredores de la población, 2739–2850 m, 20 October 1965 (fl & fr), *Huertas & Camargo* 6294 (COL!-holotype).

Shrub, erect, with branches strict, lateral with elongate extension shoots and short determinate laterals, both types flowering, the short shoots occasionally branched pseudo-dichotomously. *Stems* orange-brown?, 4-lined and ancipitous when young, soon 2-lined, eventually terete, cortex exfoliating in strips; internodes 3–6 mm long. *Leaves* sessile, appressed to ascending, markedly tetrastichous, persistent (deciduous with cortex); lamina 7–10 × 1·5–2·5 mm, linear-lanceolate to linear-oblong, plane to loosely incurved, subcucullate, not or slightly carinate, concolorous, not glaucous, subcoriaceous; apex acute, base parallel to rounded, not sheathing, free; basal veins 1(3), unbranched or with 1–2 pairs of ascending near-basal lateral branches, tertiary reticulation not visible or absent; laminar glands rather sparse, not prominent. *Inflorescence* 1-flowered, occasionally with pseudo-dichotomous branches from node below; pedicel 3–4 mm long, not or scarcely incrassate upwards; upper leaves foliose. *Flowers* not observed when expanded. *Sepals* 5·5–7 × 1·5 mm, narrowly lanceolate, acute, subcucullate; veins 5, laterals branching above, with midrib slightly prominent below; glands linear, distally sparsely punctiform or absent. *Petals c.*8 × 2·5 mm, *c.* 1·3 × petals, oblanceolate, apiculus ?; glands?. *Stamens c.* 60, longest 5·5–6 mm long, *c.* 0·7 × petals. *Ovary* not seen; styles 3, *c.* 3 mm long; stigmas narrowly capitate. *Capsule c.* 4 × 2·5 mm (? immature), ovoid, shorter than sepals. *Seeds* not seen.

Habitat details unknown; 2739–2850 m.

Colombia (Boyacá).

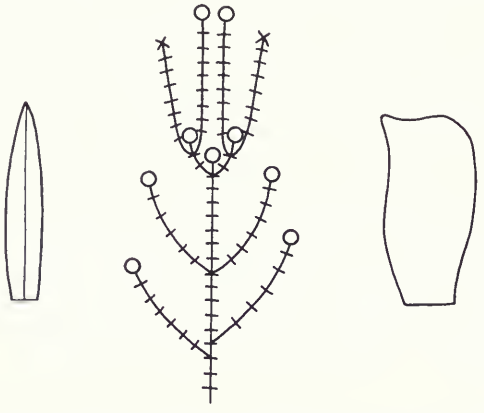
COLOMBIA. Boyacá: Arcabuco, 2739–2850 m, 20 October 1965 (fl & fr), *Huertas & Camargo* 6294 (COL).

H. gladiatum has been collected only once and the label bears no habitat notes. Nevertheless, it is clearly distinct from all other known species, being intermediate in morphology and

distribution between 11. *H. simonsii* (Sierra Nevada de Santa Marta, NE. Colombia) on the one hand, and 16. *H. roraimense* (Roraima massif) and 20. *H. asplundii* (central Ecuador) on the other. It has smaller leaves and flowers than *H. simonsii* and also differs from it in the narrow sword-shaped leaves and sepals, the leaves being 1(3)-nerved. For differences from *H. roraimense* and *H. asplundii*, see pp. 22 (opposite) and 24.

16. **Hypericum roraimense** Gleason in *Bull. Torrey bot. Club* **56**: 399 (1929). Type: Guyana, Mt. Roraima, summit, 2595 m, 27 November 1927 (fl), *Tate* 412 (NY!-holotype; K!-isotype).

Map 1.



Shrub 0·14–0·5 m tall, erect, bushy, rounded, with branches strict, pseudo-dichotomous and lateral. *Stems* orange-brown, 4-lined and ancipitous when young, eventually terete, cortex flaking irregularly; internodes 1–1·5 mm long. *Leaves* sessile, spreading from above base, suberect, not tetrastichous, becoming brown and deflexed, persistent until cortex is shed; lamina 6–13 × 1–1·8 mm, very narrowly elliptic or very narrowly oblong to linear, plane, midrib slightly prominent beneath, concolorous, not glaucous, chartaceous; apex acute, base parallel-sided or slightly narrowed above insertion, loosely sheathing, free; basal vein 1, unbranched; laminar glands dense, ± large, prominent beneath. *Inflorescence* 1-flowered, terminal and on lateral branches, with branching pseudo-dichotomous; pedicel *c.* 1·5 mm long; upper leaves not transitional. *Flowers c.* 10 mm in diam., stellate ? *Sepals* 3–7 × 0·5–1·5 mm, narrowly lanceolate, acute; veins 5, unbranched, midrib rather prominent; glands linear. *Petals* bright (?) yellow, 5–9 × 2–3 mm, 1·3–1·7 × sepals, oblanceolate-oblong; apiculus acute; glands linear, interrupted distally. *Stamens c.* 25, longest 4–5 mm long, *c.* 0·5–0·8 × petals. *Ovary* 1·7 × 1 mm, narrowly ovoid; styles 3, 4–4·6 mm long, 2·5–2·8 × ovary, erect; stigmas broadly capitate. *Capsule c.* 5 × 3 mm, ellipsoid, shorter than sepals. *Seeds* not seen.

In swamps; 2595–2880 m.

Confined to the summit of the Roraima massif (Guyana, Venezuela).

VENEZUELA. Bolívar: summit of Mt. Roraima, S. half, between Summit Camp, Great Central Rift, Central Swamp, and pond at S. end, 2700–2740 m, 28 September 1944 (fl), *Steyermark* 58898 (K, S, VEN).

GUYANA. Mt. Roraima, September–December 1931 (st), *Abbensetts* 14 (K).

H. roraimense, although quite isolated both morphologically and geographically, is most closely related to 15. *H. gladiatum*. It resembles that species in having long narrow leaves, but these are thinner, narrower, and broader at the middle if at all and become deflexed and marcescent. It would appear to be much smaller in stature and more clumped in habit than *H. gladiatum*, but has longer styles and broader stigmas.

17. **Hypericum** sp.

Map 1.

Shrublet 0·24 m tall, erect from creeping (?) and rooting base, bushy, with branches strict, lateral. Stem with cortex flaking irregularly; internodes 1–2 mm long. *Leaves* sessile, erect to spreading from above base, not tetrastichous, persistent until cortex is shed; lamina 3–4·5 × 0·5–0·8 mm, oblong-linear, plane to subincurved, slightly cucullate, midrib not or scarcely prominent beneath, concolorous, not glaucous, chartaceous; apex apiculate to obtuse, base parallel-sided, sheathing, free, basal vein 1, unbranched; laminar glands dense, large, prominent beneath. *Flowers* and *fruit* not seen.

On steep stony slopes; 3400–4500 m.

Venezuela (Mérida).

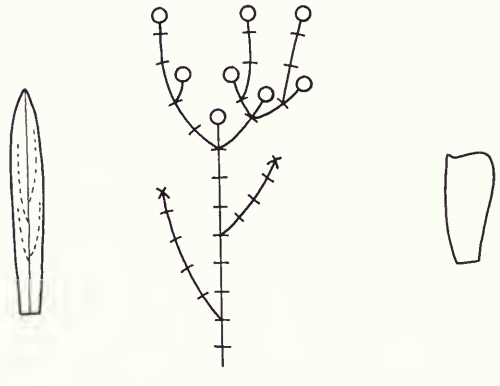
VENEZUELA. Mérida: Páramo de Los Leones, 3400–4500 m, 31 May 1930 (st), *Gehringer* 149 (VEN).

Although clearly related to *H. roraimense*, this species is not yet represented by complete enough material to name and describe formally. It is smaller than *H. roraimense* in all its parts.

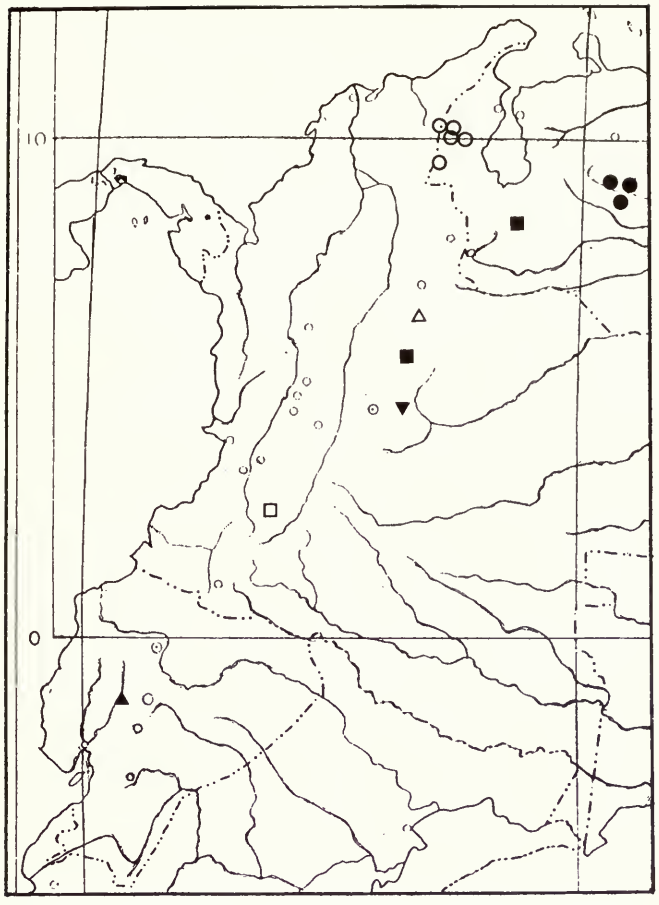
18. **Hypericum espinalii** N. Robson, **sp. nov.**

Map 3.

H. gladiato N. Robson affinis, sed foliis angustioribus 1-nervis, in media vel super mediam latioribus, ramificatione inflorescentiae mixta pseudodichotoma cymosaque, floribus minoribus, inter alia differt. Type: Colombia, Cauca, Totoró, 2500 m, 21 October 1968 (fl & e. fr), *Espinal & Ramos* 3055 (BM!-holotype; MO, VALLE).



Shrub c. 0·3 m tall, erect, with branches ± strict, lateral. *Stems* orange-brown?, 4-lined and ancipitous when young, soon 4-angular, eventually terete, cortex exfoliating in strips; internodes 3–5 mm long. *Leaves* sessile, appressed to ascend-



Map 3 Sect. 29: 18. *H. espinalii* □; 19. *H. castellanoi* ■; 20. *H. asplundii* ▲; 21. *H. radicans* △; 22. *H. paramitanum* ●; 29. *H. woodianum* ▼; 39. *H. baccharoides* ○.

ing, not markedly tetrastichous, persistent (deciduous with cortex); lamina 8–13 × 1–2 mm, linear-oblanceolate, plane or distally conduplicate, not or slightly cucullate, subcarinate, concolorous, not glaucous, subcoriaceous; apex narrowly acute to shortly acuminate with terminal hydathode?, base parallel-sided to subcuneate, not sheathing, free or united with stem-line apex to form narrow interfoliar sheath; basal vein 1, apparently unbranched or with 1–2 pairs of ascending lateral branches, tertiary reticulation not visible or absent; laminar glands dense, prominent. *Inflorescence* 1–4 (–7)-flowered, mixed unequally pseudo-dichotomous and (dichasial) monochasial, from terminal node only; peduncle and pedicels 2–2·5 mm long, not incrassate upwards; upper leaves foliose or (in cymose parts) reduced. *Flowers* 6–7 mm(?) in diam., stellate. *Sepals* 3–3·5 × 0·7–0·8 mm, narrowly triangular-lanceolate, acute, not cucullate; veins 5, unbranched, midrib or all prominent; glands linear. *Petals c.* 5 × 1·5–2 mm, *c.* 1·35–1·65 × sepals, oblanceolate, apiculus acute; glands punctiform. *Stamens c.*25–30, longest 3 mm long, *c.* 0·6 × petals. *Ovary* 2 × 0·7 mm, narrowly ellipsoid; styles 1·5 mm long, 0·75 × ovary; stigmas broadly capitate. *Capsule* (immature) 3·5 × 2 mm, ellipsoid. *Seeds* not seen.

Habitat details unknown; 2500 m.

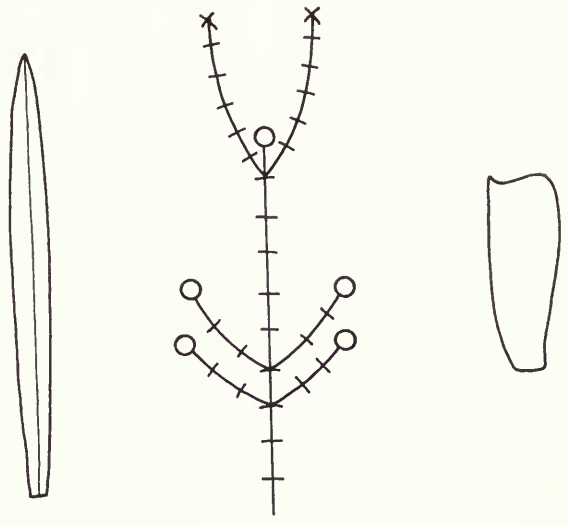
Colombia (Cauca).

COLOMBIA. Cauca: Totoró, 2500 m, 21 October 1968 (fl & fr), *Espinal & Ramos* 3055 (BM).

H. espinalii has been collected only once; but, like several of its near relatives (Spp. 15, 17, 19–21), it is morphologically and geographically isolated and cannot be accommodated in any other species. Its 1-nerved leaves resemble those of 20. *H. asplundii* apart from the prominent glands, but the erect habit (branches not rooting), mixed inflorescence, and smaller flowers distinguish it. 19. *H. castellanoi* is slenderer in habit with longer, narrower leaves and smaller flowers.

19. **Hypericum castellanoi** N. Robson, **sp. nov.**

Map 3.



H. espinalii N. Robson affinis, sed habitu diffuso ramis basi radicantibus, foliis linearibus incurvatis uninervis nervo haud ramoso, floribus laxe aggregatis, sepalis angustioribus stylis brevioribus, differt. Type: Venezuela, Mérida, camino Mérida-San José, 2360 m, 30 September 1970 (fl), *Castellano-Monasterio* 80 (VEN!-holotype).

Shrub or shrublet 0·15–1 m tall, erect to ascending, with branches ascending, lateral, rooting at the base. *Stems* orange-brown, 4-angled when young, eventually 2-lined to subterete, cortex eventually exfoliating in strips; internodes 3–6 mm long. *Leaves* sessile, spreading or outcurving from base, twisting, not tetrastichous, persistent; lamina 12–17 × 0·7–1·2 mm, linear, incurved at first, becoming plane, not cucullate or carinate, concolorous, not glaucous, chartaceous; apex acute, base parallel-sided, not sheathing, free; basal vein impressed beneath, unbranched; laminar glands almost 2-ranked, visible on both sides, not or scarcely impressed. *Inflorescence* 1-flowered, terminal and on 1–4 short lateral branches from *c.* 3–5 nodes below; pedicel 1–4 mm long, incrassate upwards; upper leaves foliose. *Flowers c.* 8 mm in diam.?, stellate. *Sepals* 3·5–5 × 0·5–0·6 mm, linear, acute; veins 3, unbranched, not or slightly prominent. *Petals* bright ? yellow, 6–7 × 1·5–2 mm, *c.* 1·5 × sepals, narrowly oblanceolate, apiculus apiculate; glands linear, interrupted distally. *Stamens c.* 20–24, longest 3–4 mm long, *c.* 0·5 × petals. *Ovary* 1·5–2·5 × 1–1·5 mm, narrowly ovoid-ellipsoid; styles 3(4), 2–3·5 mm long, *c.* 1·4 × ovary, proximally suberect, distally spreading; stigmas broadly capitate. *Capsule* and *seeds* not seen.

Open places among shrubs or in forest; 2300–2360 m.

Colombia (Boyacá), Venezuela (Mérida).

COLOMBIA. Boyacá: Río Pomeca valley below Arcabuco, 2300 m, 7 December 1985 (fl), *Wood* 5202 (K).

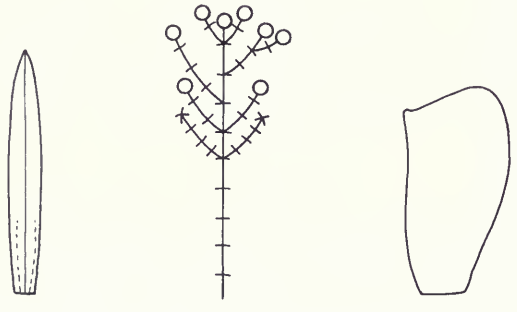
VENEZUELA. Mérida: Camino Mérida – San José, 2360 m, 30 September 1970 (fl & fr), *Castellano-Monasterio* 80 (VEN).

H. castellanoi is related to 18. *H. espinalii* but has a more slender spreading habit with much narrower leaves.

The two collections, which are from localities some 500 km apart, are not identical. The Colombian one is from an undershrub up to 1 m tall with dull leaves, the styles being *c.* 2 mm long with broadly capitate stigmas and the ovary *c.* 1·5 × 1 mm. The Venezuelan specimen is only 0·15 m tall with sublucent leaves, the styles being *c.* 3·5 mm long with rather narrowly capitate stigmas and the ovary *c.* 2·5 × 1·5 mm. Only further collecting will reveal if these differences are significant.

20. **Hypericum asplundii** N. Robson, **sp. nov.**

Fig. 7B, Map 3.



H. gladiato N. Robson affinis, sed habitu humiliore diffusioreque, foliis linearibus, floribus nonnihil minoribus, stigmatis latioribus, differt. Type: Ecuador, Pichincha, NW. slope of Mt. Corazón, *c.* 3400 m, 27 July 1955 (fl), *Asplund* 1709 (S!-holotype).

Shrublet c. 0·22 m tall, diffuse, with branches erect or ascending from rooting base, lateral and pseudo-dichotomous. *Stems* reddish-brown, 4-lined and ancipitous when young, eventually terete, internodes 4–8 mm long; cortex exfoliating in strips. *Leaves* sessile, ascending to spreading from above base, persistent until brown, sometimes subsequently breaking off above base; lamina 7–13 × 1·3–1·8 mm, linear, plane, apically subconcave, not carinate or glaucous, concolorous, subcoriaceous; apex acute, base parallel or slightly broadened, not or scarcely sheathing, free or united with stem-line apex to form very narrow interfoliar ridge; basal veins 1(3), unbranched, tertiary reticulation not visible; laminar glands rather dense to sparse and not impressed above, sparse or absent beneath. *Inflorescence* 1(2–3)-flowered, terminal and 1-flowered on short lateral or on pseudo-dichotomous branches; peduncle and pedicels 2–4 mm long; upper leaves foliose, bracts smaller. *Flowers* 12–15 mm in diam., stellate. *Sepals* 6–7 × 1·2–1·5 mm, narrowly oblong-lanceolate, acute, cucullate; veins 3–5, branched, midrib not prominent; glands linear to striiform. *Petals* bright yellow, tinged red in bud, 9–10 × 4–5 mm, *c.* 1·3 × sepals, obovate, apiculus obtuse; glands linear to striiform. *Stamens* 35–50, longest 5–6·5 mm long, *c.* 0·6 × petals. *Ovary* 2·5 × 1·5 mm, ovoid; styles 3, 2–2·5 mm long, 0·8–1 × ovary, outcurving; stigmas broadly capitate. *Capsule* (mature) and *seeds* not seen.

At the edge of thickets; *c.* 3400 m.

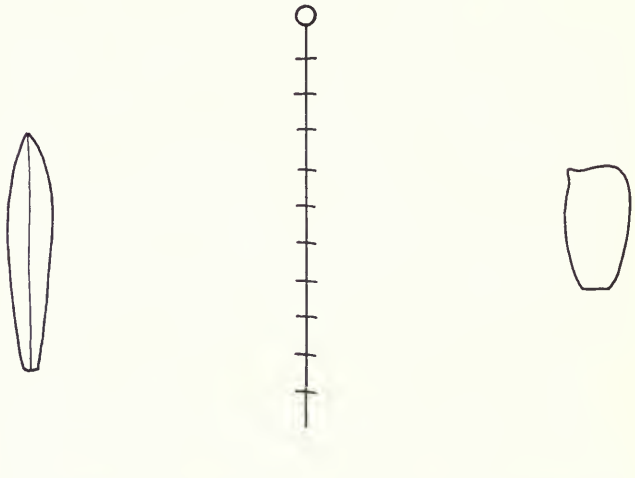
Ecuador (Pichincha). Only one specimen has been seen.

ECUADOR. Pichincha: NW. slope of Mt. Corazón, *c.* 3400 m, 27 July 1955 (fl), *Asplund* 17089 (S).

H. asplundi is related to *H. gladiatum* but differs in the more diffuse pseudo-dichotomous branching, the decumbent rooting stems, and the narrower, usually 1-nerved leaves.

21. **Hypericum radicans** N. Robson, **sp. nov.**

Map 3.



H. asplundio N. Robson affinis, sed habitu humiliori diffusiori graciliori, foliis supra mediam latioribus, floribus minoribus, staminibus circa 2 mm longis, differt. Type: Colombia, Boyacá, no precise locality, 2700 m, 15 April 1964 (fl), *Saravia* 3938 (COL!-holotype).

Shrublet with branches ascending from a rooting base, lateral. *Stems* orange-brown, 4-lined and ancipitous when young, soon terete, cortex exfoliating in strips; internodes 1·5–4 mm long. *Leaves* sessile, appressed to ascending, eventually outcurving, persistent; lamina 7–9 × 1·3–1·4 mm, linear-oblong or linear-elliptic to oblanceolate, plane, not cucullate, not carinate, concolorous, not glaucous, chartaceous; apex acute, slightly cucullate, margin plane, base narrowly cuneate, not sheathing, free or almost so; basal vein 1, unbranched, tertiary reticulation absent; laminar glands dense, not prominent. *Inflorescence* 1-flowered, branching pseudo-dichotomous? *Flowers c.* 6 mm in diam. *Sepals* 3·5 × 0·9 mm, lanceolate, acute; veins 3, laterals branched above, all prominent; glands linear, distally punctiform. *Petals c.*4 × 2 mm, *c.* 1·2 × sepals, oblanceolate, apiculus obsolete; glands interrupted-striiform. *Stamens* ?, longest *c.* 2 mm long, *c.* 0·5 × petals. *Ovary* not seen; styles 3?, *c.* 1 mm long; stigmas broadly capitate. *Capsule* and *seeds* unknown.

In mud; 2700 m.

Colombia (Boyacá).

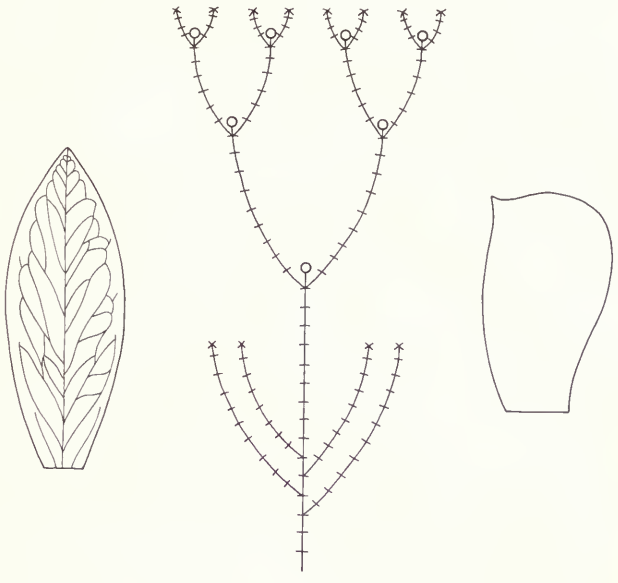
COLOMBIA. Boyacá: no precise locality, 2700 m, 15 April 1964 (fl), *Saravia* 3938 (COL).

Although clearly related to *H. asplundii*, *H. radicans* is smaller in all parts and more diffuse. It also is geographically isolated.

22. **H. paramitanum** N. Robson, **sp. nov.**

Fig. 8, Map 3.

H. terrae-firmae Sprague & Riley affinis, sed ramis junioribus valde ancipitis, foliis pinnatinerviis retinerviisque supra basin deciduis, stylis 3, inter alia differt. Type: Venezuela, Trujillo, between Jojó and La Morita, El Paramito, hacia Tuñame, 3000 m, August 1958 (fl), *Aristeguiéta & Medina* 3485 (VEN!-holotype; NY!-isotype).



Shrub or small tree, 1–4 m tall, erect, with branches strict, pseudo-dichotomous or lateral. *Stems* orange-brown, 4-lined and markedly ancipitous when young, the lower end of the subfoliar lines projecting between the leaf-pair, eventually terete, cortex exfoliating in strips; internodes 1·5–4 mm long. *Leaves* sessile, spreading from near base, not tetrastichous, deciduous from near base without fading; lamina 12–23 × 5–8 mm, elliptic or oblong-elliptic to lanceolate, plane or subrecurved, not cucullate, markedly carinate, concolorous, not glaucous, coriaceous; apex acute to obtuse, base cuneate, not sheathing, free; basal veins 1(3) with *c.* 5 pairs of ascending or spreading lateral branches, tertiary reticulation often marked, dense, ± impressed; laminar glands dense, obscure or invisible superficially, not prominent. *Inflorescence* 1(2–3)-flowered, with pseudo-dichotomous branches from node below; peduncle and pedicels 7–9 mm long, gradually incrassate upwards; upper leaves foliose. *Flowers* 25–30 mm in diam., stellate, petals becoming reflexed. *Sepals* 8–11 × 3–4 mm, lanceolate, acute; veins 5–7, branching and anastomosing above, with midrib prominent; glands linear, distally punctiform. *Petals* (bright ?) yellow, 14–15 × 8 mm, *c.* 2 × sepals, oblanceolate; apiculus acute; glands linear, interrupted distally. *Stamens* 100–120, longest 9–10 mm long, *c.* 0·6 × petals. *Ovary* 3–4 × 2·5–3 mm, broadly ovoid; styles 3, 8–10 mm long, *c.* 2·5 × ovary, suberect; stigmas slightly enlarged. *Capsule c.* 7 × 3 mm, narrowly ovoid-ellipsoid, shorter than sepals. *Seeds* not seen.

In subpáramo and páramo; 2800–3150 m.

Venezuela (Trujillo), known from only three collections.

VENEZUELA. Trujillo: Páramo de Guaramacal, between Boconó and Guaramacal, 2800 m, 24 February 1971 (fl), *Steyermark* 104824 (P, VEN); Páramo de Guirigay NE. of Guirigay, base of Piedras Blancas, *c.* 3150 m, 18 October 1972 (fl), *López-Figuéras & Rodríguez* 8824 (VEN).

H. paramitanum is an isolated relict species, differing from 11. *H. simonsii*, 12. *H. papillosum*, and 3. *H. phellos* in its thickly coriaceous leaves with pinnate and densely reticulate venation, deciduous above the base, and the peduncle and pedicels incrassate upwards.

23. **Hypericum cuatrecasii** Gleason (Part 7: 41; No. 16).

24. **Hypericum goyanesii** Cuatrec. (Part 7: 38; No. 14).

25. **Hypericum myricariifolium** Hieron. (Part 7: 40; No. 15).

26. **Hypericum quitense** R. Keller (Part 7: 41; No. 17).

27. **Hypericum loxense** Benth. (Part 7: 43; No. 18).

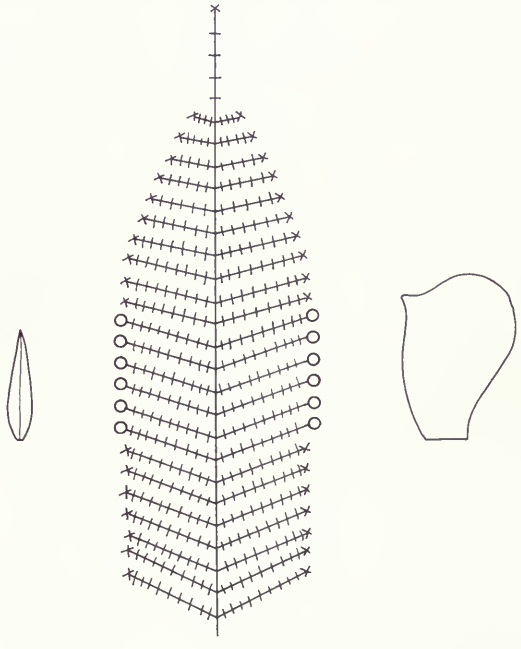
27a. subsp. **aequatoriale** (R. Keller) N. Robson; 27b. subsp. **loxense**.

28. **Hypericum lycopodioides** Triana & Planchon (Part 7: 36; No. 12).

29. **Hypericum woodianum** N. Robson, **sp. nov.**

Map 3.

H. lycopodioidei Triana & Planchon affinis sed foliis angustiore lanceolatis conduplicatis recurvis, aspectu acicularibus, floribus minoribus petalis luteis haud flavis, differt. Type: Colombia, Cundinamarca, between Guasca and Suera, 2900 m, 25 August 1985 (fl), *Wood* 5040 (K!-holotype; COL).



Shrub ('undershrub') to 1·5 m tall, erect, with elongate branches strict, lateral, bearing numerous short ascending lateral branching, only the short shoots *c.* ⅗–⅘ from the base flowering, not branching dichotomously. *Stems* orange-brown, 4-lined and ancipitous when young, soon 2-lined, eventually terete, cortex exfoliating in strips; internodes 5–6 mm long (long shoots) or *c.* 1 mm long (short shoots). *Leaves* sessile, squarrose (spreading above sheathing base), markedly tetrastichous, persistent and becoming deflexed;

Fig. 8 *H. paramitanum*: (a) habit; (b) stem with leaf bases; (c) leaf; (d) sepal; (e) petal; (f) stamens (partly cut away) and ovary; (g) young capsule (a × ½; b–f × 3; g × 2). All *Lopez-Figuéras & Rodríguez* 8824.

lamina 4–7 × 1–1·5 mm, lanceolate, markedly incurved, not cucullate, slightly carinate, concolorous, not glaucous, subcoriaceous; apex acute, margin narrowly pellucid, base parallel to subamplexicaul, somewhat sheathing, united to form projecting interfoliar ridge; basal veins 1(3), unbranched or with 1–2 pairs of ascending near-basal lateral branches, tertiary reticulation obscure; laminar glands rather sparse, not prominent. *Inflorescence* 1-flowered, on short lateral branches; pedicel almost absent; upper leaves narrowly triangular. *Flowers* c. 15–18 mm in diam., stellate? *Sepals* 5–6 × 2–2·5 mm, lanceolate to ovate-lanceolate, acuminate; veins 7, branching and anastomosing above, with midrib slightly prominent; glands linear, distally interrupted. *Petals* deep? yellow, c. 9 × 6 mm, c. 1·8 × sepals, obovate; apiculus acute; glands linear, distally interrupted to striiform. *Stamens* c. 75, longest c. 4·5 mm long, c. 0·5 × petals. *Ovary* c. 3 × 1·8 mm, ellipsoid; styles 3, 4·5 mm long, 1·5 × ovary, divergent from above base; stigma narrow. *Capsule* and *seeds* not seen.

Roadside bank in cloud forest region; 2900 m.

Colombia (Cundinamarca).

COLOMBIA. Cundinamarca: Guasca to Suera, 2900 m, 25 August 1985 (fl), *Wood* 5040 (K).

H. woodianum is related to the larger-leaved form of *H. lycopodioides*, differing from it in its narrow conduplicate recurved leaves, the whole shoot being reminiscent of a small *Cryptomeria*, and in its smaller flowers. The dried petals are darker yellow than those of *H. lycopodioides*. The locality of the sole collection of *H. woodianum* (central Cundinamarca), in conjunction with the morphological differences, suggests that it and *H. lycopodioides* are vicariant species.

30. **Hypericum thuyoides** Kunth (Part 7: 37; No. 13).

31. **Hypericum sabiniforme** Trevir. (Part 7: 45; No. 19).

32. **Hypericum laricifolium** Juss. (Part 7: 47; No. 20).

33. **Hypericum martense** N. Robson (Part 7: 51; No. 21).

34. **Hypericum hartwegii** Benth., (Part 7: 51; No. 22).

35. **Hypericum maguirei** N. Robson (Part 7: 52; No. 23).

Subsect. 3. **Brathys**

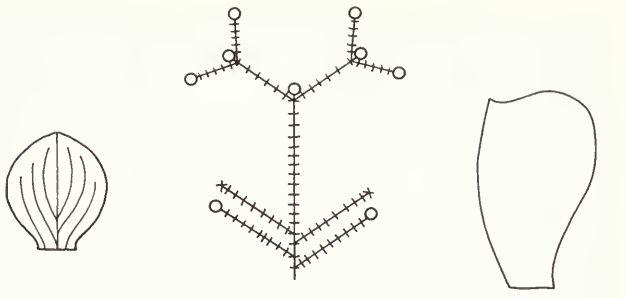
Frutices vel fruticuli. *Folia* binatim conjuncta, sessilia vel plusminusve breviter pseudopetiolata, plana vel incurva vel incurvo-conduplicata, apice plana vel incurva vel interdum cucullata, 1–9-nervia venatione parallela vel flabellata vel pinnata vel simplici, supra basin decidua vel rarissime omnino persistentia et marcescentia (Sp. 36) vel nodis caulis disarticulatis (Sp. 67). *Inflorescentia* 1-flora ramificatione pseudodichotoma vel laterali vel raro 2–13-flora ramificatione cymosa (Spp. 38, 39). *Flores* 5–40 mm in diametro, stylis 3 vel raro 4 (in floribus magnis) vel 4–5 (in floribus parvis). Typus: *H. brathys* Sm. nom. illegit. (≡ *Brathys juniperina* L. f. = *H. juniperinum* Kunth (Species 36–74).

36. **Hypericum magniflorum** Cuatrec. (Part 7: 53; No. 24).

37. **Hypericum gleasonii** N. Robson (Part 7: 55; No. 25).

38. **Hypericum mexicanum** L. (Part 7: 56; No. 26).

39. **Hypericum baccharoides** Cuatrec. in *Brittonia* **11**: 165 (1959). Type: Colombia, Magdalena, Sierra de Perijá, 48 km



from Valledupar, 1 km from Venezuelan border, 3000 m, 5 February 1945 (fl), *Grant* 10842 (US!-holotype).

Map 3.

Shrub 0·5–1 m tall, erect, with branches strict, lateral or more rarely paired and pseudo-dichotomous. *Stem* orange-brown, 4-lined and slightly ancipitous when young, eventually terete, cortex exfoliating in strips or irregular flakes; internodes 1–1·5 mm long. *Leaves* sessile, outcurving, ± closely imbricate, tetrastichous, deciduous at or just above the base without fading; lamina 4–8 × 3·5–7 mm, broadly elliptic to circular or obovate-spathulate, plane, not carinate, concolorous, undulate-papillose especially beneath, densely glaucous and (always?) viscid, coriaceous; apex broadly obtuse to rounded, base angustate, sheathing, free or united to form very narrow interfoliar ridge; basal veins 1–7, pinnate with ascending branches or flabellate, ultimate branching and tertiary reticulum not visible; laminar glands dense, slightly prominent; marginal glands at least sometimes secreting. *Inflorescence* 1-flowered, terminal and on lateral branches, occasionally with pseudo-dichotomous branches; pedicel absent; upper leaves transitional. *Flowers* 15–20 mm in diam., stellate. *Sepals* 5–7 × 3·8–4·5 mm, ovate to subacute; veins 5–7, obscurely branched, with midrib scarcely prominent beneath; glands mostly linear, distally punctiform. *Petals* bright? yellow, 9–12 × 4–5 mm, c. 2 × sepals, oblong-ovate; apiculus acute; glands linear, distally punctiform. *Stamens* 70–120, 5–8 mm long, longest c. 0·65 × petals. *Ovary* 1·5–2(–2·5) × 1–1·5 mm, broadly ovoid; styles 3, 3–5 mm long, 2–2·5 × ovary, suberect, outcurved distally; stigmas small. *Capsule* c. 6 × 5 mm, broadly ovoid, shorter than sepals. *Seeds* c. 1·3 mm long, ecarinate; testa finely scalariform-reticulate.

In forest and páramo; 2700–3350 m.

Colombia (Magdalena), Venezuela (Zulia); confined to the Sierra de Perijá.

COLOMBIA. Magdalena: Sierra de Perijá, plain between Cerro Venado and Cerro Avión, 3270–3350 m, 8 November 1959 (fl), *Cuatrecasas & Romero Castañeda* 25119 (US); Sierra de Perijá, east of Manaure, Quebrada de Floridablanca, 2700–2800 m, 10 November 1959 (fr), *Cuatrecasas & Romero Castañeda* 25161 (US).

VENEZUELA. Zulia: Sierra de Perijá, 2800–2900 m, 29 December 1950 (fl), *Gines* 1993 (US); Perijá, Cerro Cetari, April 1952 (fl), *Urbano* 15 (VEN).

H. baccharoides at first glance seems very distinct from other species in sect. *Brathys*. Closer inspection, however, reveals that it is allied to 37. *H. gleasonii*, which also occurs in the Colombia-Venezuela border area but much further south. From *H. gleasonii* it differs in its smaller stature with shorter internodes, smaller and relatively broader leaves that are

densely glaucous, smaller flowers, 5–7-veined sepals, shorter petals, smaller ovary, and narrower stigmas.

40. **Hypericum stuebelii** Hieron. (Part 7: 58; No. 27).

41. **Hypericum prietoi** N. Robson (Part 7: 58; No. 28).

42. **Hypericum cassiopiforme** N. Robson (Part 7: 59; No. 29).

43. **Hypericum decandrum** Turcz. (Part 7: 59; No. 30).

44. **Hypericum pimeleoides** Planchon & Linden ex Triana & Planchon (Part 7: 60; No. 31).

45. **Hypericum magdalenicum** N. Robson (Part 7: 63; No. 32).

46. **Hypericum valleanum** N. Robson (Part 7: 64; No. 33).

47. **Hypericum sprucei** N. Robson (Part 7: 65; No. 34).

48. **Hypericum aciculare** Kunth (Part 7: 66; No. 35).

49. **Hypericum recurvum** N. Robson (Part 7: 68; No. 36).

50. **Hypericum wurdackii** N. Robson (Part 7: 69; No. 37).

51. **Hypericum costaricense** N. Robson (Part 7: 70; no. 38).

52. **Hypericum bryoides** Gleason (Part 7: 71; No. 39).

53. **Hypericum bolivaricum** N. Robson (Part 7: 72; No. 40).

54. **Hypericum juniperinum** Kunth (Part 7: 72; No. 41).

55. **Hypericum prostratum** Cuatrec. (Part 7: 75; No. 42).

56. **Hypericum parallelum** N. Robson (Part 7: 76; No. 43).

57. **Hypericum marahuacanum** N. Robson (Part 7: 77; No. 44).

57a. subsp. **marahuacanum**; 57b. subsp. **strictissimum** N. Robson; 57c. subsp. **chimantaicum** N. Robson.

N.B. The type of 57c is *Steyermark & Wurdack* 758, not 7581 as cited in Part 7: 80.

58. **Hypericum lancifolium** Gleason (Part 7: 80; No. 45).

59. **Hypericum horizontale** N. Robson (Part 7: 81; No. 46).

60. **Hypericum tetrastichum** Cuatrec. (Part 7: 82; No. 47).

61. **Hypericum strictum** Kunth (Part 7: 83; No. 48).

61a. subsp. **strictum**; 61b. subsp. **compactum** (Triana & Planchon) N. Robson.

62. **Hypericum jaramilloi** N. Robson (Part 7: 86; No. 49).

63. **Hypericum cardonae** Cuatrec. (Part 7: 87; No. 50).

64. **Hypericum caracasanum** Willd. (Part 7: 89; No. 51).

64a. subsp. **caracasanum**; 64b. subsp. **turumiquirense** (Steyerm.) N. Robson.

65. **Hypericum ekmanii** A. H. Liogier (Part 7: 90; No. 52).

66. **Hypericum pycnophyllum** Urban (Part 7: 92; No. 53).

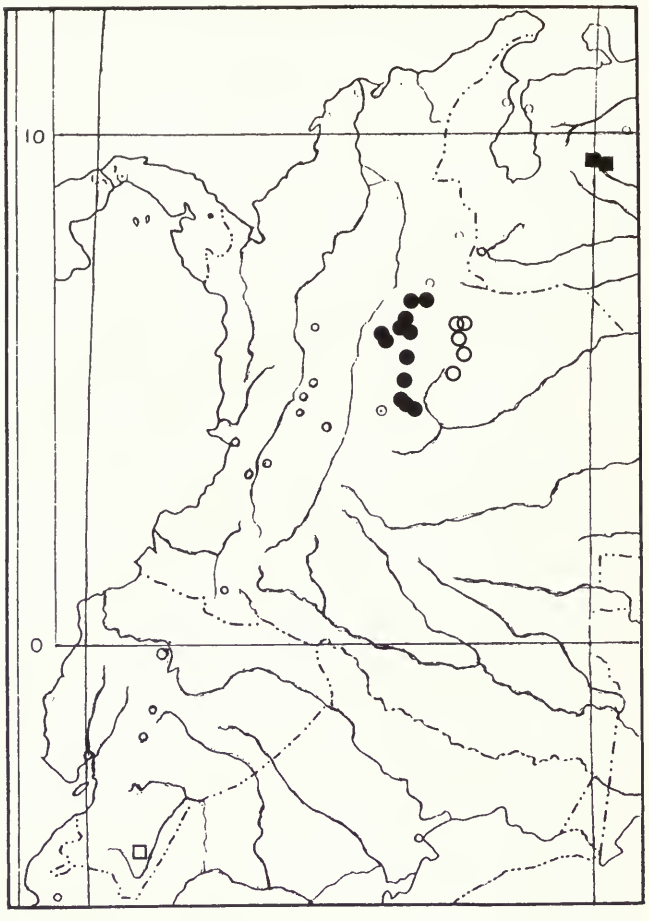
67. **Hypericum millefolium** Urban & Ekman (Part 7: 93, No. 54).

68. **Hypericum ruscoides** Cuatrec. (Part 7: 93; No. 55).

69. **Hypericum harlingii** N. Robson, **sp. nov.**

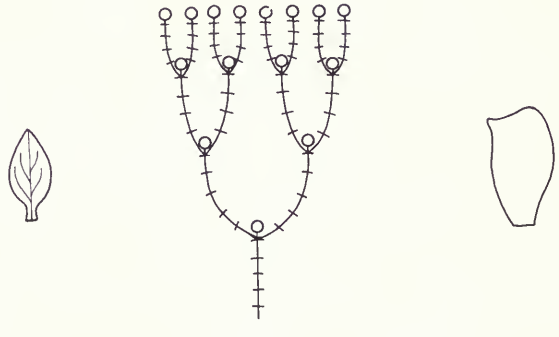
Map 4.

H. ruscoidei Cuatrec. affinis, sed foliis minoribus incurvatis



Map 4 Sect. 29: 69. *H. harlingii* □; 75. *H. cymobrathys* (modified from Part 7, p. 54) ○; 76a. *H. chamaemyrtus* subsp. *chamaemyrtus* ●; 76b. *H. chamaemyrtus* subsp. *pseudocaracasanum* ■.

apice acuminatis, floribus minoribus, sepalis lineari-ellipticis acutis vel subacuminatis, 3-nervatis, stigmatibus angustis, inter alia differt. Type: Ecuador, Loja, Cerro Toledo, 10–12 km SE. of Yangana, 3000–3200 m, 6 April 1985 (fl), *Harling & Andersson* 23776 (GB!-holotype; BM!-isotype).



Shrub 0–5 m tall, erect, branches strict, pseudo-dichotomous and lateral. *Stems* orange-brown, 4-lined and ancipitous when young, eventually terete, cortex exfoliating in strips; internodes 2–3 mm long. *Leaves* petiolate with petiole 1 mm long; lamina 4–6 × 2–3 mm, elliptic, margins incurved, not cucullate or carinate, dull green above, sublucent beneath, not glaucous, chartaceous; apex acuminate, base cuneate-angustate, not sheathing, united to form very narrow

interfoliar ridge; basal vein 1, impressed beneath, with 2–3 pairs of obscure ascending laterals loosely reticulating; laminar glands dense, visible on both sides, not impressed. *Inflorescence* 1-flowered, terminal, repeatedly branching pseudo-dichotomously; pedicel 4 mm long; upper leaves foliose. *Flowers* 12–15 mm in diam., stellate. *Sepals* 4–5 × 1·2–1·5 mm, linear-elliptic, acute to subacuminate; veins 3, branching distally, becoming prominent. *Petals* bright ? yellow, 6–7 × 3 mm, *c.* 1·5 × sepals, narrowly oblong-oblanceolate; apiculus acute; glands linear, distally striiform. *Stamens* 35–40, longest 4–4·5 mm long, *c.* 0·65 × petals. *Ovary* 2–2·5 × 1·5 mm, broadly ovoid-ellipsoid; styles 3, 3 mm long, 1·3–1·5 × ovary, divergent-incurving; stigmas narrow. *Capsule* (old) *c.* 5 × 3 mm, ovoid. *Seeds* not seen.

In montane forest; 3000–3200 m.

Ecuador (Loja).

ECUADOR. Loja: *c.* 8 km E. of Yangana, on footpath to Numbala, 3100 m, 31 January 1966 (fl), *Knight* 11 (WIS).

Although *H. harlingii* is known by only two collections, it is quite distinct. Its nearest relative appears to be 68. *H. ruscoides*, from which it differs by the smaller, dull green, incurved leaves and the smaller flowers with narrower, 3-veined sepals and slender styles with narrow stigma. The most closely related form of *H. ruscoides* is not the nearest geographically (central Ecuador) but that in southern Colombia.

70. **Hypericum llanganaticum** N. Robson (Part 7: 95; No. 56).

71. **Hypericum struthiolifolium** Juss. (Part 7: 96; No. 57).
Add first record for Ecuador:

ECUADOR, Zamora-Chinchipe: road from Loja to Zamora, 2800 m, 18 September 1961 (fl), *Dodson & Thien* 685 (WIS pp.).
The rest of the WIS material, as well as the BM specimen of this collection, belongs to *H. sprucei.*

72. **Hypericum andinum** Gleason (Part 7: 97; No. 58).

73. **Hypericum lancioides** Cuatrec. (Part 7: 98; No. 59).

73a. subsp. **lancioides**; 73b. subsp. **congestiflorum** (Triana & Planchon) N. Robson.

74. **Hypericum selaginella** N. Robson (Part 7: 102; No. 60).

Subsect. 4 **Spachium** R. Keller in Engl. & Prantl, *Nat. Pflanzenfam.* **3** (6): 214 (1893), pro parte, see Part 1: 338, excluding synonyms of Sect. 30. *Trigynobrathys* (Y. Kimura) N. Robson (p. 47).

Frutices vel suffrutices vel fruticuli vel herbae perennes vel annuae. *Folia* libera, pseudopetiolata vel sessilia, plana vel margine recurva vel revoluta vel raro omnino recurva (Spp. 79, 85 p.p., 87), apice rarissime cucullata (Sp. 85 p.p.), 1–3-nervia vel raro 5–7-nervia (Sp. 75) venatione parallela vel pinnata vel simplici, supra basin decidua vel omnino persistentia sed rarissime marcescentia (Sp. 75 p.p.) *Inflorescentia* 1–40-flora ramificatione pseudo-dichotoma vel cymosa vel mixta vel rariori laterali. *Flores* 3–16 mm in diametro, stylis 3. Typus: *H. gentianoides* (L.) Britton, Sterns & Pogg. (Species 75–87).

75. **Hypericum cymobrathys** N. Robson (Part 7: 103; No. 61).

Map 4.

N.B. The leaves are free, not united as stated in Part 7: 103, and can be marcescent rather than deciduous above the base.

76. **Hypericum chamaemyrtus** Triana & Planchon in *Annls Sci. nat.* (Bot.) IV, **18**: 298 (1862); R. Keller in *Bull. Herb. Boissier* II, **8**: 178 (1908), in Engl. & Prantl, *Nat. Pflanzenfam.* 2nd ed. **21**: 181 (1925) ['*chamaemyrtos*']; Rodríguez Jiménez in *Mems Soc. Cienc. nat. La Salle.* **33**: 16 (1973), in adnot.; non sensu Gleason in *Bull. Torrey bot. Club* **56**: 102 (1929) = *H. garciae* Pierce. Type: Colombia, Cundinamarca, Gachalá [Gachetá?] et Ubala, cordillère de Bogota, 1700 m, August 1855 (fl & fr), *Triana* 5464 (COL ?-holotype; P!-isotype; BM!, COL!, G!, W!; F!, GH!, NY!-photographs).

Subshrub 0·5–1 m tall, erect or decumbent at the base; branches from near base or very rarely lateral, strict and sometimes ascending. *Stems* reddish-brown, 4-lined, markedly ancipitous and eglandular? when young, eventually terete, cortex exfoliating in strips; internodes 2–14(–20) mm long. *Leaves* pseudopetiolate with pseudopetiole up to 1 mm long or subsessile, spreading from base or outcurving to suberect, longer than internodes, deciduous above base without fading; lamina 8–22 × 1·5–11 mm, broadly ovate or elliptic to very narrowly elliptic-oblong or lanceolate or (lower) oblanceolate, margin ± recurved (plane in narrowest, young leaves), not cucullate, midrib ± prominent beneath or not, not glaucous, somewhat paler beneath, coriaceous; apex acute or apiculate to obtuse, base broadly cuneate or rounded to angustate, not sheathing, the pair free; basal veins 1(3), with or without 1–4 pairs of main ascending lateral branches, tertiary reticulation obscure or absent; laminar glands dense, not prominent. *Inflorescence* 1– *c.* 30-flowered, branching dichasial/monochasial or pseudo-dichotomous/sympodial or mixed, occasionally with 1–2 pairs of subsidiary branches from node immediately below; peduncle and pedicels 3–8 mm long, not incrassate upward; bracts foliar, gradually reduced. *Flowers* 10–16 mm in diam., stellate. *Sepals* 4–9·5 × 1·2–4 mm, unequal, lanceolate or ovate-lanceolate or elliptic to oblong or oblanceolate, acute to acuminate; veins 3–5(7), not or distally branched, all becoming slightly prominent; glands all linear or punctiform in upper ⅓–⅔. *Petals* bright? to pale yellow, 6·5–10 × 3·5–8 mm, 1·3–1·9 × sepals, obovate; apiculus acuminate to obtuse; glands linear, distally interrupted or punctiform. *Stamens* 35–80, longest 4–6 mm long, 0·5–0·75 × petals, fascicles not distinct. *Ovary* 2–3 × 1–1·5 mm, ellipsoid; styles 3, 2·5–3·5 mm long, 1·2–1·7 × ovary, spreading-incurving; stigmas ± broadly capitate to peltate. *Capsule* 5–7 × 2·5–4 mm, narrowly ovoid to cylindric-ellipsoid, shorter than sepals. *Seeds* 0·6–0·8 mm; testa finely scalariform-reticulate.

In páramo and in dense woods and damp meadows below; 1700–3290 m.

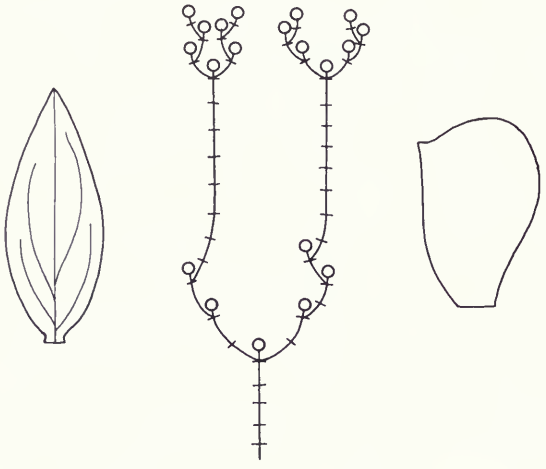
Colombia (Boyacá, Cundinamarca); Venezuela (Lara, Trujillo).

H. chamaemyrtus is related to *H. cymobrathys* but is less woody, and the leaves usually have pinnate not parallel venation. Occasionally, however, they have 3 basal leaf veins. The pseudopetiolate leaf base also indicates the relationship with *H. cymobrathys*. The inflorescence, however, is usually laxer than in that species. The Sáchica (Boyacá) population, with broad, sharply acute, 3-nerved leaves, is morphologically closest to *H. cymobrathys*.

H. chamaemyrtus occurs in two isolated populations. The Colombian one (from southern Boyacá to central Cundinamarca) is taller with inflorescence branches longer and ultimately dichasial/monochasial and leaves ovate to very narrowly elliptic-oblong, acute to obtuse, definitely pseudopetiolate and eventually spreading; whereas the Venezuelan population is shorter, less richly branched above, with elliptic, usually mucronate, and often subsessile leaves that remain suberect, and the inflorescence branches are wholly pseudo-dichotomous. There is, however, a certain degree of overlap in variation between these populations that prevents their recognition as species.

76a. **Hypericum chamaemyrtus** subsp. **chamaemyrtus**

Fig. 9A, Map 4.



Subshrub 0·7–1 m tall. *Leaves* definitely pseudopetiolate, lamina broadly to very narrowly elliptic-oblong, base broadly cuneate to rounded, midrib not prominent beneath. *Inflorescence* branching at first pseudo-dichotomous, ultimately dichasial/monochasial. *Petals* 5–8 mm long, apiculus acuminate to acute.

Colombia (Boyacá, Cundinamarca).

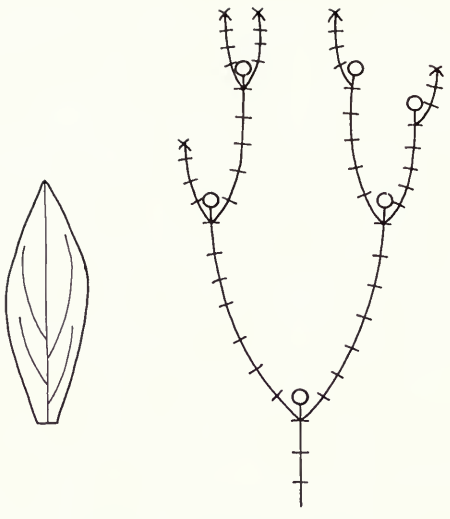
COLOMBIA. Boyacá: Arcabuco, alredores de la población, 2739–2850 m, 20 October 1965 (fl), *Huertas & Camargo* 6265 (COL); Sáchica, 1990 m, August 1962 (fl), *Saravia* 4349 (COL); above and immediately N. of Villa de Leiva, 2300 m, 8 December 1985 (fl & fr), *Wood* 5207 (K). *Cundinamarca*: Zipaquirá, 'Lungazaque patreros', 2609 m, 17 January 1943 (fl), *Huertas & Camargo* 546 (F); Fúquene Lake, 24 March 1945 (fl), *Schiefer* 620 (GH, US); Ubaté, 2600 m, 18 May 1952 (fl), *Køie* 4517 (C); between Sisga and Machetá, 2800 m, 3 September 1983 (fl), *Wood* 3960 (K).

Subsp. *chamaemyrtus* has two centres of variation: (i) the main Boyacá population (most similar to *H. cymobrathys*); (ii) the population in the Bogotá area, whence there is a north-eastward trend in leaf shape towards the narrower leaves characteristic of the type.

76b. **Hypericum chamaemyrtus** subsp. **pseudocaracasanum** (Steyerm.) N. Robson, **stat. nov.**

Fig. 9B, Map 4.

H. pseudocaracasanum Steyerm. in *Fieldiana Bot.* **28** (2): 394 (1952). Type: Venezuela, Trujillo, La Quebrade Cortijo, by Lara-Trujillo boundary, above Humocara Bajo, 2600–2800 m, 6 February 1944 (fl), *Steyermark* 55346 (F!-holotype; NY!-isotype).



Subshrub 0·5–0·7 m tall. *Leaves* subsessile, lamina ± narrowly elliptic, base narrowly cuneate to angustate, midrib ± prominent beneath. *Inflorescence* branching wholly pseudo-dichotomous. *Petals* 3·5–6 mm long, apiculus obtuse.

Venezuela (Lara, Trujillo).

VENEZUELA. Lara: W. of Humocara Bajo, above Los Aposentos, Las Sabanetas, 2530 m, 5 February 1944 (fl), *Steyermark* 55292 (F); Ditto. Monen, trail from Humocaro to Buenos Aires (Caserio) below Páramo Los Rosas, 2285–3290 m, 20 June 1979 (fl & fr), *Liesner* et al. 7987 (BM, MO, VEN). Trujillo; Páramo Agua de Obispo, 2500 m, 24 September 1922 (fl), *Jahn* 1182 (US, VEN).

77. **Hypericum arbuscula** Standley & Steyerm. in *Publs Field Mus. nat. Hist.* (Bot.) **23**: 63 (1944); Standley & Williams in *Fieldiana Bot.* **24**(7): 48 (1961). Type: Guatemala, Baja Verapaz, Patal, 4 September 1941 (fl & fr), *J. R. Johnston* 1812 (F!-holotype).

Map 5.

H. silenoides sensu Rodríguez Jiménez in *C.r. Soc. Biogéogr.* **432**: 91, map 2 (1972), pro parte, in *Mems Soc. Cienc. nat. La Salle* **33**: 51 (1973), pro parte quoad spec. *Breedlove & Raven* 8416.

Subshrub or shrublet 0·25–0·45 m tall, with taproot, bushy to slender, erect or decumbent but not rooting; branches from all along stem or only from below inflorescence, strict. *Stems* green to reddish-brown, 4-lined, ancipitous and densely gland-dotted at first, eventually terete, cortex exfoliating in strips or irregularly; internodes 2–20 mm long. *Leaves* sessile,

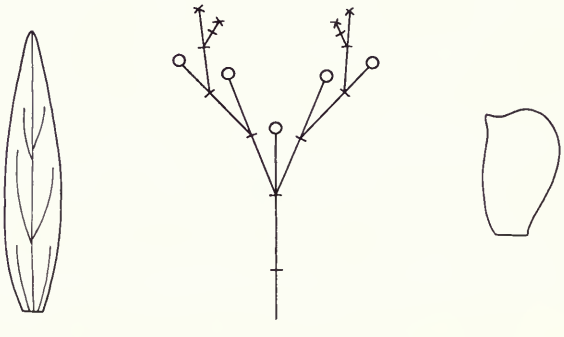
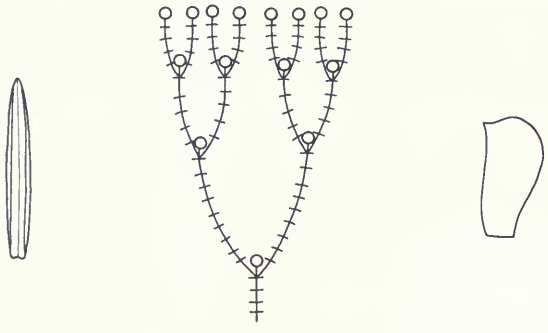


Fig. 9 A. *H. chamaemyrtus* subsp. *chamaemyrtus*: (a) habit; (b) stem with leaves; (c) leaf; (d) sepal; (e) petal; (f) flower (petals and stamens partly cut away); (g) young capsule. B. *H. chamaemyrtus* subsp. *pseudocaracasanum*: (h) habit (a, h × ½; b × 1; c, f × 2; d, e, g × 4). A. *Wood* 3960; B. *Leisner* et al. 7987.

Map 5 Sect. 29: 77. *H. arbuscula* □; 78. *H. rubritinctum* ▼; 79. *H. fuertesii* ○; 82. *H. gnidioides* ●; 83. *H. eastwoodianum* △; 84. *H. peninsulare* ▽; 85. *H. beamanii* ◆; 86. *H. galinum* ■; 88. *H. gentianoides* (part) ▲.

densely imbricate to outcurving or spreading, longer than internodes (sometimes except upper ones), persistent (i.e. deciduous with cortex); lamina 5–20 × 0·6–3·7 mm, lanceolate to linear, margin recurved to strongly revolute, entire, not or scarcely cucullate, midrib prominent and smooth beneath, paler beneath or subconcolorous, sometimes glaucous above, subcoriaceous to coriaceous; apex subacute to acute, base shortly angustate to subamplexicaul, free; basal veins 1–3, unbranched or sometimes with 1 pair of ascending main lateral branches and rarely 1 pair of midrib branches; laminar glands dense, not prominent. *Inflorescence* 1– *c.* 40-flowered, branching mixed dichasial/monochasial and



pseudo-dichotomous or repeatedly pseudo-dichotomous/sympodial, without or with up to 6 pairs of subsidiary branches; peduncle and pedicels 2–12 mm long, not incrassate upwards; bracts foliar or reduced. *Flowers* 6–22 mm in diam., stellate (? to infundibuliform). *Sepals* 4·5–10 × 0·8–3 mm, subequal or unequal, elliptic or linear-oblong or linear-lanceolate to oblanceolate, acute to acuminate; veins (3)5–7, unbranched, becoming prominent; glands linear, distally interrupted or punctiform. *Petals* bright (?) yellow, not tinged red, 5–10 × 1–4 mm, *c.* 1·1–1·3 × sepals, oblanceolate to narrowly oblong-spathulate; apiculus acute; glands linear, distally interrupted to punctiform. *Stamens c.* 40–45, longest 4–5·5 mm long, *c.* 0·5–0·75 × petals, fascicles not distinct. *Ovary c.* 1·5–1·8 × 0·8–1 mm, narrowly ovoid-ellipsoid to narrowly ellipsoid, trigonous; styles 3, 3·5–5 mm long, *c.* 2–3 × ovary, slender, spreading; stigmas narrowly capitate. *Capsule* 3–5 × 1·5–2 mm, narrowly ovoid to narrowly ellipsoid, trigonous, acute, shorter than sepals. *Seeds c.* 0·5–6 mm long, ecarinate; testa finely scalariform.

Habitat not recorded; 1500 m.

Mexico (Chiapas), Guatemala (Baja Verapaz, El Quiché).

MEXICO: Chiapas, Municipio de Trinitaria, road to Lagos de Montebello 17·6 km NE. of La Trinitaria, 1590 m, 26 January 1965 (fl & fr), *Breedlove & Raven* 8416 (F, MICH); a 12 km E. de La Trinitaria por carretera a Montebello, 1570 m, 22 July 1984 (fl & fr), *Hernández & Chacón* 544 (BM, MO).

GUATEMALA. Baja Verapaz: Santa Rosa, 1500 m, July 1887 (fr), *v. Turckheim* 1314 (F, K, NY, P, US); Patal to Salamá, 4 November 1941 (fl & fr), *J. R. Johnston* 1811 (F). El Quiché: no precise locality, 1942 (fl), *Aquilar* 773 (F).

H. arbuscula, which typically does seem to merit its epithet (= 'little tree') by remaining unbranched until it produces the first flower, resembles a small, dense-leaved form of *H. gnidioides*; and the densely imbricate leaves also give it an ericoid appearance. But *Johnson* 1811, from near the locality of the type[4] and with the previous number, has a decumbent stem with longer internodes, longer leaves, and mixed branching in the inflorescence. The Mexican (Chiapas) population has larger flowers and broader leaves than the Guatemalan ones, and the inflorescence branching is mixed. It is thus the most closely related species to 76. *H. chamaemyrtus* of all the Mexican and Central American members of subsect. *Spachium* and is also linked with 78. *H.*

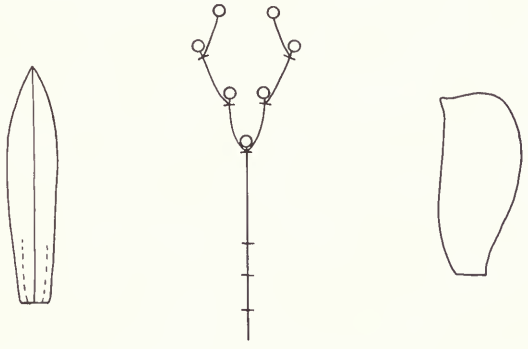
[4]Standley & Williams (1961: 48) suggest that the type may have been collected from further south than Patal, perhaps about Santa Rosa. If that was indeed so, it might explain the great similarity between the type and von Turckheim's Santa Rosa collection and the differences between them and *Johnson* 1811 from between Patal and Salamá.

rubritinctum and 82. *H. gnidioides*. This Chiapas population at first glance would seem to merit taxonomic recognition, at least as a subspecies; but *Johnson* 1811 is nicely intermediate between it and typical *H. arbuscula*, and so it seems best to maintain the latter species undivided, at least until more is know about the Mexican plants.

H. arbuscula is related to both *H. gnidioides* and *H. rubritinctum*, differing from the former by the longer styles and from the latter by the smaller flowers. The derivative species related to *H. arbuscula* are all confined to the Greater Antilles (the *H. diosmoides* group, Spp. 79–81).

78. **Hypericum rubritinctum** N. Robson, **sp. nov.**

Fig. 10A, Map 5.



H. arbuscula Standley & Steyerm. affinis, sed ramificatione inflorescentiae dichasiali vel monochasiali haud pseudo-dichotoma, bracteis bracteolisque lineari-subulatis, floribus maioribus, 13–20 mm in diam., sepalis oblongis vel lanceolatis vel anguste ovatis, petalis 8–14 mm longis dorsaliter rubritincta, stylis brevioribus, inter alia differt. Type: Mexico, Guerrero, Minas Gro., Armenia, 2340 m, 23 October 1936 (fl), *Hinton* 9757 (US!-holotype; GH!, K!, MICH!, NY!, P!-isotypes).

H. gnidioides sensu Rodríguez Jiménez in *C.r. Soc. Biogéogr.* **432**: 91, map 5 (1972), pro parte, in *Mems Soc. Cienc. nat. La Salle* **33**: 114 (1973), pro parte quoad spec. *Hinton* 7457, 9457.

Shrublet 0·2–0·35 m tall, with taproot, fastigiate, erect; branches lateral and sometimes basal (or none), often opposite, strict. *Stems* reddish-brown, 4-lined, ± ancipitous and ± densely gland-dotted when young, eventually terete, cortex exfoliating in strips; internodes 3–20 mm long. *Leaves* sessile, erect or appressed, ascending or spreading, subimbricate, the upper longer than internodes, the lower shorter, persistent (i.e. deciduous with cortex) or breaking off earlier above base; lamina 6–15 × 1–2·3 mm, linear to narrowly elliptic-oblong, margin revolute, smooth, not cucullate, midrib prominent or not and smooth beneath, paler beneath, and often glaucous above or on both sides, coriaceous; apex subacute, base narrowly cuneate to parallel-sided, free; basal veins 1(3), unbranched, tertiary reticulation absent; laminar glands dense, not prominent or slightly so beneath. *Inflorescence* (1)3–9-flowered, branching all dichasial/monochasial (or the lowermost pseudo-dichotomous), without subsidiary branches; peduncle and pedicels 2–4 mm long, not incrassate upwards; bracts and bracteoles linear-subulate. *Flowers* 13–20 mm in diam., stellate. *Sepals* 3·5–4·2 × 1–1·5 mm, subequal, oblong to lanceolate or narrowly ovate, subacute; veins 5–7, unbranched, all becoming ± prominent; glands all linear or punctiform in upper ⅓. *Petals* bright yellow, tinged red outside, 8–14 × 2·5–4 mm, 2–3·5 × sepals, oblanceolate; apiculus obsolete; glands few, punctiform. *Stamens c.* 40, longest 4–5 mm long, *c.* 0·6 × petals, fascicles 3, subdistinct. *Ovary c.* 1·5 × 1 mm, narrowly ellipsoid; styles 3, 3·5–4 mm long, *c.* 2–2·5 × ovary, spreading; stigmas narrowly to rather broadly capitate. *Capsule* 4–6 × 2–3 mm, ovoid-cylindric, acute, shortly exceeding sepals. *Seeds* not seen.

Rocky places in *Quercus* woodland and in *Pinus* forest; 1700–2340 m.

Mexico (Guerrero, México).

MEXICO. Guerrero: Minas Gro, Armenia, 2340 m, 23 October 1936 (fl), *Hinton* 9757 (GH, K, MICH, NY, P, US). México: Temascaltepec, Cumbre, 27 March 1935 (fl & e. fr), *Hinton* 7457 (F, G, GH, K, MICH, MO, NY, US); Cerro de Ahuacatitlan, Almoylola de Alquisiras, 1700 m, 29–30 March 1954 (fr), *Matuda* 30605 (MEXU).

H. rubritinctum was included in 82. *H. gnidioides* by Rodríguez Jiménez, but it differs from the latter especially in its longer slender styles (c.f. 77. *H. arbuscula*) and (both absolutely and relative to the sepals) larger petals, which are red-tinged in bud and become red-veined later. Its other close relative, *H. arbuscula*, has shorter internodes (particularly below the inflorescence), smaller flowers, and pseudo-dichotomous/sympodial inflorescence branching.

79. **Hypericum fuertesii** Urban, *Symb. antill.* **7**: 523 (1913); Mosc., *Cat. Fl. doming.* **1**: 381 (1943). Type: Hispaniola, Dominican Republic, La Vega, Loma Rosilla, 2700 m, 6 July 1912 (fl & fr), *Fuertes* 1747 (B†-holotype; BM!, C!, F!, G!, H!, K!, NY!, P!, S!, U!, US!, W!, Z!-isotypes).

Fig. 10B, Map 5.

Shrublet or wiry perennial herb 0·09–0·2 m tall and to *c.* 0·4 m long, with taproot, erect or decumbent and rooting, sometimes mat-forming; branches from below inflorescence and sometimes lateral, strict or very rarely divaricate. *Stems* reddish-brown, 4-lined, ± ancipitous and densely gland-dotted when young, eventually terete, cortex exfoliating in

Fig. 10 A. *H. rubritinctum*: (a) habit; (b) stem with leaves; (c) leaf; (d) flower (petals and stamens partly cut away); (e) sepal; (f) petal. B. *H. fuertesii*: (g) habit; (h) stem with leaves; (i) leaf; (j) sepal; (k) petal; (l) stamens (partly cut away) and ovary; (m) young capsule (a, g × ½; b, d × 2; c, e, f, h, l × 4; i–k, m × 8). A. *Hinton* 9757; B. *Liogier* 15969.

strips; internodes 1–5 mm long. *Leaves* sessile, appressed to spreading, longer to shorter than internodes, persistent; lamina 0·5–5 × 0·3–1·2 mm, linear to very narrowly oblong, margin plane to incurved, entire, sometimes cucullate, midrib prominent but not scabrid beneath, concolorous, not glaucous, subcoriaceous; apex acute, base parallel-sided, free; basal vein 1, unbranched; laminar glands dense, sometimes prominent beneath. *Inflorescence* 1-flowered, branching pseudo-dichotomous, also sometimes from lateral branches; peduncle 2–4·5 mm long, not incrassate upwards; bracts foliar. *Flowers* 5–10 mm in diam., infundibular. *Sepals* 2–3(–4) × 0·7–0·9 mm, unequal, narrowly oblong or narrowly elliptic-oblong to lanceolate, acute; veins 3–5 unbranched, becoming ± prominent; glands linear, distally striiform to punctiform. *Petals* bright yellow to orange, tinged red outside in bud, 4–5·5 × 1·5–2 mm, *c.* 1·5–2 × sepals, oblong-oblanceolate; apiculus acute; glands striiform to punctiform. *Stamens* 10–15, longest 3·5–4·5 mm long, *c.* 0·8 × petals, in 5 ± distinct fascicles. *Ovary* 1–1·5 × 0·5–1 mm, narrowly ovoid-ellipsoid, trigonous; styles 3, 2·5–3 mm long, *c.* 2 × ovary, very slender, spreading; stigmas broadly capitate to peltate. *Capsule* 3–5 × 1·8–2·5 mm, narrowly cylindric to narrowly ellipsoid, acute, exceeding sepals. *Seeds* 0·5–0·6 mm long, ecarinate; testa finely scalariform.

Exposed grassy slopes and open *Pinus* forest, often in wet areas; (600–)1200–3000 m.

Dominican Republic (La Vega, Benefactor [San Juan], Santiago), Haiti (Ouest, Sud).

DOMINICAN REPUBLIC. La Vega: vicinity of La Lagunita (Laguita), *c.* 2800–2900 m, 19 July 1967 (fl & fr), *Gastony*, *Jones & Norris* 300 (GH, NY, US); La Rucilla, Cienega de Manabao, Jarabacoa, 2200 m, 10 December 1969 (fr), *Liogier* 17199 (GH, NY, US); Valle Nuevo, *c.* 2400 m, 17 October 1929 (fr), *Ekman* H. 13825 (F, GH, S). Benefactor [San Juan]: Sabana Neuva, Cordillera Central, N. of Río Arriba del Norte, 1950 m, 17–20 April 1946, *R. & E. Howard* 9021 (BM, GH, MICH, NY, P, S, US); Pico Duarte, 3000 m, 15–19 June 1974 (fl & fr), *Liogier* 21779 (NY). Santiago: Manción, slope of Cerro Lucio, *c.* 2400 m, 12 June 1929 (fl & fr), *Ekman* H. 12844 (F, G, GH, K, NY, S, US); bassin du Rio Bao, December 1952 (fl & fr), *Humbert* 27737 (P).

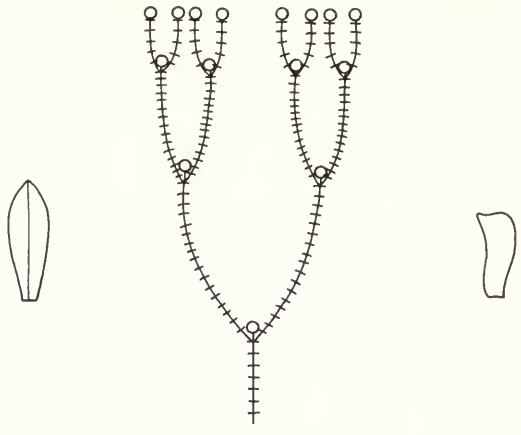
HAITI. Ouest: Massif de la Selle, Pétionville, Mt. La Visite, *c.* 2150 m, 12 August 1924 (fr), *Ekman* H. 1441 (C, S, US). Sud: Massif de la Hotte, W. group, Port-à-Piment, ridge W. of Morne Formont, 2275 m, 2 January 1927 (fr), *Ekman* H. 7548 (A, MO, S, US).

H. fuertesii is most closely related (outside Hispaniola) to *H. arbuscula* from Guatemala, from which it differs by the smaller size of all parts, the decumbent rooting stems, and the occasional presence of lateral branches. Urban described it as an annual or perennial herb, but it is usually somewhat shrubby.

80. **Hypericum dichotomum** Lam., *Encycl.* **4**: 167 (1797); Choisy, *Prodr. monogr. Hypéric.*: 49 (1821), in DC., *Prodr.* **1**: 549 (1824); D. Dietr., *Syn. pl.* **4**: 1236 (1847); Urban, *Symb. antill.* **7**: 284 (1912); Mosc., *Cat. fl. doming.*: 381 (1943). Types: Hispaniola, Haiti, *Thiery* s.n. in Herb. Thouin (P-LAM-lectotype (mihi); C!, MPU-syntypes).

Map 6.

H. diosmoides sensu R. Keller in *Bull. Herb. Boissier* **6**: 261 (1898), pro parte excl. typum.



H. christii Urban, *Symb. antill.* **7**: 283 (1912); Mosc., *Cat. fl. doming.*: 381 (1943). Type: Hispaniola, Haiti, in Morne Bouret, 1700 m, July, *Christ* 1873 (B†-holotype?).

H. polycladum Urban, *Symb. antill.* **7**: 284 (1912); Mosc., *Cat.fl. doming.*: 381 (1943). Type: Hispaniola, Dominican Republic, prope Constanza in Valle Nuevo, 2200 m, August 1910 (fl), *v. Turckheim* 3568 (B†-holotype; NY!).

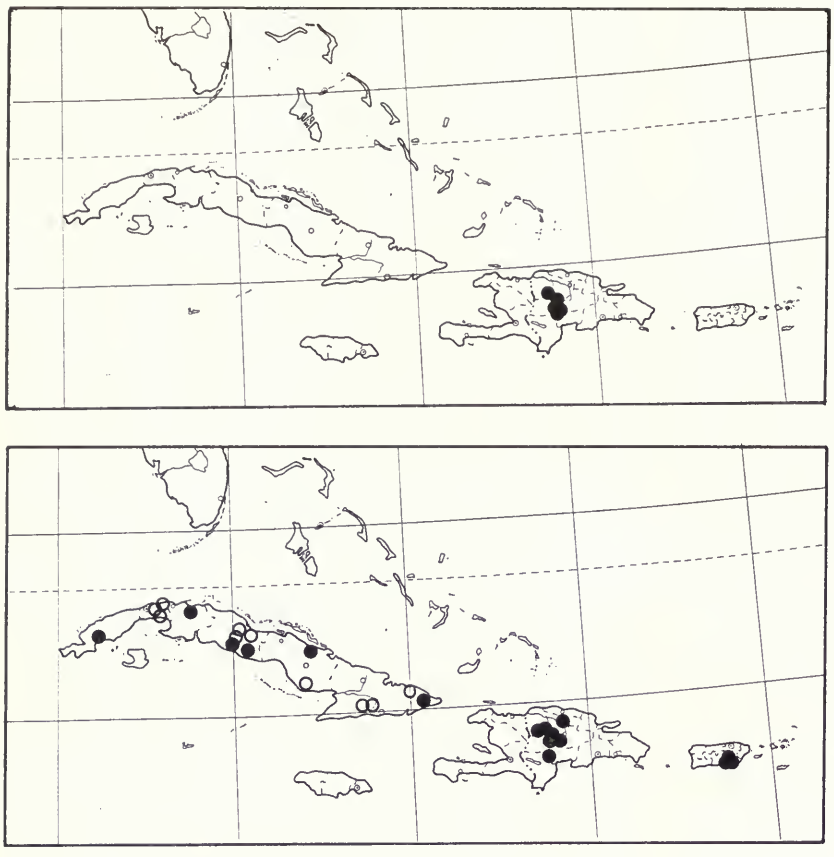
H. subglaucum Urban & Ekman in sched. (*Ekman* H. 13610).

Shrublet or wiry perennial herb, 0·06–0·2 m tall and to *c.* 0·4 m long, with taproot, erect or decumbent to trailing and rooting, sometimes mat-forming; branches from below inflorescence and lateral, sometimes also basal, divaricate. *Stems* reddish-brown, 4-lined, ancipitous and densely gland-dotted at first, eventually terete, cortex exfoliating in strips; internodes 1–18 mm long. *Leaves* sessile, suberect to spreading, longer to shorter than internodes, persistent; lamina 1·5–6 × 0·5–2·5 mm, oblong-elliptic or oblanceolate to obovate, margin plane, entire, not cucullate, midrib prominent beneath, concolorous, sometimes ± glaucous, subcoriaceous to chartaceous; apex subacute (or rarely acute) to rounded, base parallel-sided to narrowly cuneate, free; basal vein 1, sometimes obscurely branched; laminar glands ± dense, ± prominent on both sides. *Inflorescence* 1–5-flowered, branching repeatedly pseudo-dichotomous/sympodial and sometimes dichasial-monochasial, without subsidiary branches; peduncle and pedicels 2–7 mm long, not incrassate upwards; bracts and bracteoles foliar, not reduced. *Flowers* 4–5 mm in diam., infundibuliform? *Sepals* 2·5–4 × 1–1·8 mm, unequal, narrowly oblong or oblanceolate to obovate-spathulate, acute to rounded; veins 3–5, unbranched, becoming prominent; glands linear, distally punctiform. *Petals* bright (?) yellow to yellow-orange, 3·5–5 × 1–1·5 mm, *c.* 1·5 × sepals, oblong-oblanceolate; apiculus acute?; glands distal, punctiform. *Stamens c.* 10–15, longest 3·5–4 mm long, *c.* 0·8 × petals, in 5 ± distinct fascicles. *Ovary* 1–1·5 × 0·5–0·8 mm, ellipsoid, acute to obtuse, exceeding sepals; styles 3, 1·5–2·5 mm long, 2–2·5 × ovary, very slender, spreading; stigma peltate. *Capsule* 3·5–5 × 2–4 mm, ovoid-ellipsoid to subglobose, acute to obtuse, exceeding sepals. *Seeds* 0·6–0·7 mm long, ecarinate; testa finely scalariform.

Open, often wet places at roadsides and in *Pinus* forest and cloud forest; 1200–3000 m.

Dominican Republic (La Vega, Benefactor [San Juan], Santiago), Haiti (Ouest).

DOMINICAN REPUBLIC. La Vega: Cordillera Central,



Map 6 Sect. 29. A (upper): 80. *H. dichotomum* ●. B (lower): 81. *H. diosmoides* ● (confirmed records), ○ (additional records, *fide* Lippold, 1970).

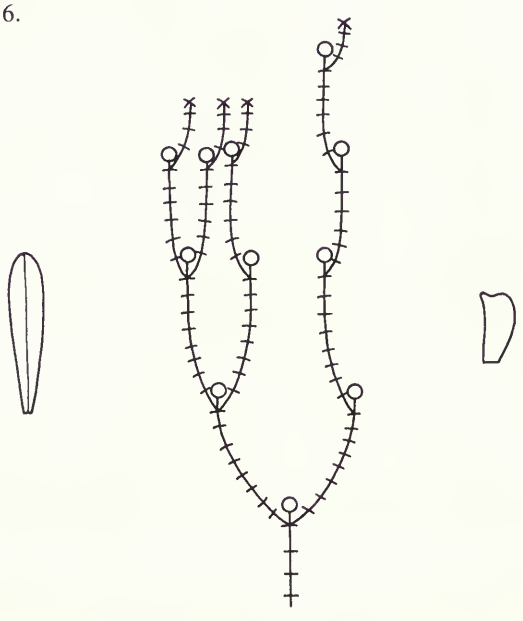
Valle Nuevo, *c.* 2400 m, 17 October 1929 (fl & fr), *Ekman* H. 13824 (K, NY, S); Jarabacoa, Loma de la Salle, 1200 m, 24 May 1968 (fl & fr), *Liogier* 11386 (GH, NY, US); Constanza to Jarabacoa, near Paso Bajito, 1300 m, 13 November 1922 (fl & fr), *Ekman* H. 14121 (C, F, GH, S, US). Benefactor [San Juan]: Sabana Nuevo (Cordillera Central), N. of Río Arriba de Norte, 1950 m, 18 September 1946 (fr), *R. & E. Howard* 9081 (BM, GH, MICH, NY, S, US); cercania de Pico Duarte, 3000 m, 15–19 June 1974 (fl & fr), *Liogier* 21789 (NY). Santiago: Cordillera Central, La Pelona, headwaters of Bao R., 1600 m, 1–7 October 1968 (fl & fr), *Liogier* 12746 (GH, NY, US).

HAITI. Ouest: Massif de la Selle, Pétionville, between Morne La Visite and Morne Brouet, *c.* 1500 m, 27 April 1926 (fl & fr), *Ekman* H. 5999 (G, K, NY, S, US); Massif de la Selle, Fourcy, 10 September 1924 (fl & fr), *Ekman* H. 1832 (S, US).

H. dichotomum has relatively broader leaves than *H. fuertesii* with the apex usually obtuse to rounded; the sepals, petals, styles, and capsules are also shorter, and the angle of the pseudo-dichotomies is usually wider. Thus, even though the distributional areas of these two species overlap, the species themselves apparently remain distinct. The most primitive form of *H. fuertesii* is in the Cordillera Central, whereas that of *H. dichotomum* is in southern Haiti (Massif de la Selle). The latter form is morphologically nearest to *H. fuertesii*, but the broader (acute) leaves and wider branching are distinctive.

81. **Hypericum diosmoides** Griseb., *Cat. pl. Cub.*: 40 (1866); Sauvalle in *An. R. Acad. Cienc. Habana* **5**: 203 (1868), *Fl. cub.*: 8 (1869); R. Keller in *Bull. Herb. Boissier* **6**: 261 (1898), pro parte, quoad typum, in op. cit., II, **8**: 180 (1908); Urban, *Symb. antill.* **4**: 412 (1910); R. Keller in Engl. & Prantl, *Nat. Pflanzenfam.* 2nd ed. **21**: 183 (1925); Mosc., *Cat. fl. doming.* **1**: 381 (1943); Alain in Léon & Alain, *Fl. Cuba* **3**: 317 (1953); Lippold in *Wiss. Z. Friedr.-Schiller Univ., Jena*, Math.-Nat. R. **19**: 377 (1970); A. H. Liogier & Martorell, *Fl. Puerto Rico & adj. Isl.*: 110 (1982). Type: Cuba, Pinar del Rio?, San Juan de Buenavista, 15 November 1860–64 (fr), *Wright* 2124 (GOET-holotype; BM!, GH!, K!, MO!, NY!, P!, S!, W!).

Map 6.



H. hecatophyllum C. Wright in *An. R. Acad. Ci. Habana* **5**: 203 (1868), in Sauvalle, *Fl. cub.*: 8 (1869); Alain in Léon & Alain, *Fl. Cuba* **3**: 317 (1953). Type: Cuba, Pinar del Rio, al lado del río San Sebastian en la loma cerca de la Vega Lagunillas, 1860–64 (fr), *Wright* 3517 (NY!-holotype; GH!, K!, P!, S!, US!).

H. portoricense Kuntze, *Revis. gen pl.*: 60 (1891). Type: Porto Rico, Cayey, 600 m, 13 July 1874 (fr), *Kuntze* 445 (NY!-holotype; K!-isotype).

H. constanzae Urban, *Symb. antill.* **7**: 285 (1912); Mosc., *Cat. fl. doming.* **1**: 381 (1943). Type: Hispaniola, Dominican Republic, prope Constanza, 1190 m, June, *v. Turckheim* 3053 b (B†).

H. ophiticola Britton in *Mem. Torrey bot. Club* **16:** 83 (1920); Alain in Léon & Alain, *Fl. Cuba* **3**: 317 (1953). Type: Cuba, Las Villas, City of Santa Clara, 29–31 March 1910 (st), *N. & E. Britton & Wilson* 6140 (NY!-holotype).

Wiry perennial herb, to *c.* 0·15 m tall and to *c.* 0·5 m long, with taproot, decumbent (or rarely erect) to prostrate and rooting, not markedly mat-forming; branches from below inflorescence, lateral and basal, ascending or divaricate. *Stems* green, 4-lined, ancipitous and densely gland-dotted when young, eventually subterete, cortex sometimes exfoliating in strips; internodes 2·5–12 mm long. *Leaves* sessile to very shortly pseudopetiolate, ± spreading, longer to shorter than internodes, persistent; lamina 3–9 × 0·5–3·5 mm, oblanceolate to oblong-spathulate, margin recurved to revolute, entire, not cucullate, midrib slightly prominent beneath, paler and ± glaucous beneath, subcoriaceous (?) to chartaceous; apex subapiculate-obtuse to rounded, base narrowly cuneate to angustate, free; basal vein 1, sometimes with 2–3 pairs of lateral branches; laminar glands ± dense, ± prominent beneath. *Inflorescence* 1–5-flowered, pseudodichotomous to sympodial and rarely dichasial/monochasial, without subsidiary branches; peduncle and pedicels 2–6 mm long, not incrassate upwards; bracts foliaceous, not reduced, bracteoles subulate. *Flowers* 3–7 mm in diam., stellate to infundibuliform? *Sepals* 2·5–4·3 × 0·5–2 mm, unequal, narrowly oblong or oblanceolate to oblanceolate-spathulate, obtuse or apiculate to rounded, veins 3–5, unbranched, becoming prominent; glands linear, punctiform in distal $\frac{2}{3}$. *Petals* bright (?) yellow, 2·5–3(–4) × 0·8–1(–1·5) mm, about equalling sepals, oblanceolate; apiculus obsolete; glands distal, punctiform. *Stamens* 10–15, longest 1·5–2 mm long, *c.* 0·6 × petals, irregularly grouped? *Ovary c.* 1 × 0·5–0·8 mm, exceeding sepals; styles 3, 0·5–1(–1·5) mm long, *c.* 0·5–1·5 × ovary, slender, outcurved; stigma peltate. *Capsule* 2·5–3·5(–4·5) × 1·5–2(–2·5) mm, cylindric-ellipsoid to subglobose, obtuse, exceeding sepals. *Seeds* 0·5 mm long, ecarinate; testa finely scalariform.

Open or shaded grassy slopes, roadsides or ditches, often in damp places; (200–)300–1350 (–2400?) m.

Dominican Republic (La Vega, Santiago, Santiago Rodríguez, Monte Cristi), Haiti (Ouest), Porto Rico, Cuba (Oriente, Camaguey, Las Villas, Pinar del Rio).

DOMINICAN REPUBLIC. La Vega: Jarabacoa, 500 m, 18 June 1969 (fl & fr), *Liogier* 15747 (GH, NY, US); Mata Grande, 900 m, 13 October 1968 (fl & fr), *Liogier* 13004 (GH, NY). Monte Cristi: Las Rosas, Río Naranjo, *c.* 500 m, 6 June 1926 (fr), *Ekman* H. 6217 (S). Santiago: Sierra del Palo Quemado, 800 m, 10 May 1887 (fl), *Eggers* 1868 (BM, C, G, NY, P, US); *c.* 8 km NW. of San José de las Matas, Pinar de Caimito, 400–450 m, 9 October 1969 (fr & fr), *Liogier* 16269 (GH, NY, US). Santiago Rodríguez: toward Río Mao, Manción, *c.* 300 m, 25 May 1929, *Ekman* H. 12602 (F, GH, S, US).

HAITI. Ouest: vicinity of Furcy, *c.* 1300 m, 26 May–15 June 1920 (fr), *Leonard* 4785 (BM, C, NY, US); Massif de la Selle, Marigot, near Grand Bassin Chotard, 9 June 1928 (fr), *Ekman* H. 10075 (S).

PORTO RICO. Near Cayey, Coamo,[5] 20 September 1885, *Sintenis* 2488 (A, BM, F, G, K, MO, NY, P, S, US, W, Z); Monte Torrecilla, 900–1100 m, 19–20 March 1915 (fr), *Britton* 5201 (F, MO, NY, US); between Ciales and Casablanca, 200–300 m, 30 January 1979 (fl), *Liogier [& Martorell]* 28216 (NY).

CUBA. Camaguey: Sierra Cubitas to Santa Rosa, 21 February 1909 (fl), *Shafer* 553 (BM, F, GH, NY, US). Las Villas; Trinidad Mts, Tope de Collanthes, 800 m, 17 July 1957 (fr), *Bro. Alain [Liogier]* 6317 (GH); El Cumbre, 10 June 1923 (fl), *Ekman* 13947(S). Oriente: Baracoa, Río Jojo, *c.* 7 km N. of Cajovavo, 1 August 1951 (fr), *Webster* 3998 (GH, MICH); Sabanilla to Yamuri Arriba, 31 January–1 February 1911, *Shafer* 8415 (GH, K, NY, US). Pinar del Rio: Río San Sebastian, cerca de la Verga Lagunillas, 1860–1864 (fr), *Wright* 3517 (GH, K, NY, P, S, US) (see above).

H. diosmoides appears to be a lower-altitude derivative of *H. dichotomum* that has spread from Hispaniola westward to Cuba and eastward to Porto Rico. It is usually easily distinguished from *H. dichotomum* by the longer, relatively narrower leaves with margin recurved to revolute, the shorter petals relative to the sepals, and the shorter styles relative to the ovary. There are, however, a few specimens from Hispaniola intermediate morphologically and from altitudes at the lower range of the *H. dichotomum* range but above the normal limit of *H. diosmoides*. As these specimens are few in number, it seems best to maintain these two taxa as species at present; an intensive study of field variation, however, might show that *H. diosmoides* should be reduced to subspecific rank under *H. dichotomum*. The intermediate specimens seen are:

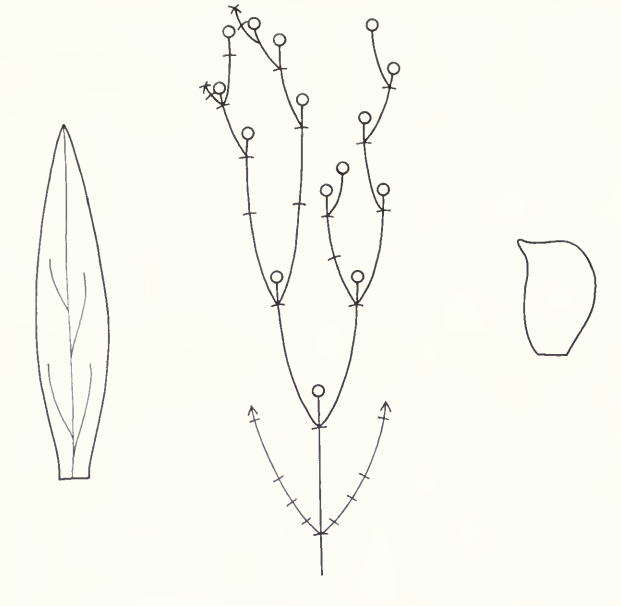
DOMINICAN REPUBLIC. La Vega: Constanza to Valle Nuevo, El Montazo, 1600–1800 m, 29 May 1969 (fl & fr), *Liogier* 15455 (GH, NY, US).

HAITI. Ouest: Massif de la Selle, Pétionville, Morne Brouet, *c.* 1600 m, 26 July 1924 (fl), *Ekman* H. 1102 (S, US).

In addition *Fuertes* 1810 (La Vega, in Loma Rosilla, 2700 m, 6 July 1912 (fl & fr) (GH, NY, P, W)), which morphologically is typical *H. diosmoides*, was growing at an unusually high altitude.

82. **Hypericum gnidioides** Seemann, *Bot. voy. Herald*: 88, t. 17 (1853); Triana & Planchon in *Annls Sci. nat.* (Bot.) II, **18**: 298 (1862); R. Keller in *Bull. Herb. Boissier* II, **8**: 176 (1908), in Engl. & Prantl, *Nat. Pflanzenfam.* 2nd ed. **21**: 181 (1925); Gleason in *Bull. Torrey bot. Club* **56**: 102 (1929); Rodríguez Jiménez in *C.r. Soc. Biogéogr.* **432**: 91, map 5 pro parte (1972), in *Mems Assoc. Cienc. nat. La Salle* **33**: 114 (1973), pro parte excl syn. *H. arbuscula* et spec. ex Guatemala et Mexico; N. Robson in *Ann. Mo. bot. Gdn* **65**: 12, f.1 (1978), pro parte excl. distrib. Mexic. Type: Panama, Veraguas, Volcano of Chiriquí, February 1849 (fr), *Seeman* 1640 (GOET!-lectotype; BM!, GH!, K!, F!, GH!, NY!, US!-photographs).

[5]Some labels have 'prope Cayey', others 'Coamo'.



Map 5.

H. hondurasense R. Keller in *Bot. Jb.* **58**: 197 (1923); in Engl. & Prantl, *Nat. Pflanzenfam.* 2nd ed. **21**: 183 (1925). Type: Honduras, Zeguagalpa, Cerro Picacho, 24 January 1898 (fl), *Niederlein* 204 (B†-holotype; F!, US!-photographs).

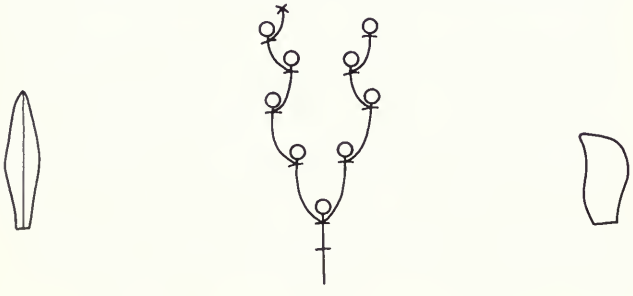
H. woodsonii Standley in *Ann. Mo. bot. Gdn* **26**: 294 (1939). Type: Panama, Veraguas, Volcan de Chririquí, Loma Larga to summit, 2500–3380 m, 4–6 July 1938 (fl & fr), *Woodson, Allen & Siebert* 1040 (F!-holotype; GH!, MO!, NY!, US!-isotypes).

H. pinetorum Standley in *Publs Field Mus. nat. Hist.* (Bot.) **23**: 65 (1944). Type: Honduras, Dept. Comayagua, near Siguatepeque, 1080–1400 m, 14–27 February 1928 (fr), *Standley* 55880 (F!-holotype; GH!, US!-isotypes).

H. arbuscula sensu Rodrígues Jiménez in *Mems Soc. Cienc. nat. La Salle* **33**: 114 (1973), qua syn., non Standley & Steyerm.

Icones: Seemann, *Bot. voy. Herald*: t. 17 (1853); N. Robson in *Ann. Mo. bot. Gdn* **65**: 11, f.l (1978).

Subshrub or shrublet (*sometimes annual* ?) 0·09–1·5 m tall, with taproot, usually bushy, erect; branches from base and below inflorescence, strict or lower ones ascending, rarely decumbent and mat-forming (0·03–0·08 m, '*H. woodsonii*'), not rooting. *Stems* reddish-brown, 4-lined, ancipitous and densely gland-dotted when young, eventually terete, cortex exfoliating in strips; internodes 3–12 mm long. *Leaves* sessile, spreading from base to closely imbricate, longer than internodes, deciduous above base or persistent (i.e. deciduous with cortex); lamina (3–)5–18(–23) × 0·8–4(–5) mm, narrowly elliptic-oblong to linear or more rarely narrowly lanceolate or (the lower) narrowly oblong-spathulate, margin recurved to revolute and rarely scabrid beneath, paler beneath, not glaucous, coriaceous to subcoriaceous; apex acute or apiculate to obtuse, base angustate or narrowly cuneate to parallel-sided, the pair scarcely forming interfoliar ridge or free; basal veins 1(3), with 1(2) pairs of main ascending lateral midrib branches, tertiary reticulation absent; laminar glands dense, not prominent or slightly so beneath. *Inflorescence* 1–25-flowered, branching pseudodichotomous/sympodial or very rarely wholly or mixed dichasial/monochasial, sometimes with 1 pair of subsidiary branches from node immediately below, or lower laterals flowering; peduncle and pedicels 4–10 mm long, not incrassate upwards;· bracts foliar, gradually reduced. *Flowers* 6–10 mm in diam., stellate. *Sepals* 4–8 × 1–2·3 mm, unequal, oblanceolate or oblanceolate-spathulate to oblong or elliptic or linear, acute; veins 5, unbranched, all becoming ± prominent; glands all linear or punctiform in upper ¼. *Petals* bright yellow to orange-yellow (? or orange), (5–)6–7(–8·5) × 2·5–4·5(–6) mm, 1·2(–1·5?) × sepals, oblanceolate to oblong; apiculus acute; glands linear, distally interrupted. *Stamens* 20–40, longest 3·5–6 mm long, *c.* 0·75 × petals, fascicles not distinct. *Ovary* 1·5–1·8 × 0·6–1 mm, narrowly ovoid-ellipsoid; styles 3, 2–3 mm long, *c.* 1·3–1·5 × ovary, spreading; stigmas broadly capitate. *Capsule* 3·5–5·5 × 2–3 mm, ovoid-cylindric to cylindric-ellipsoid, trigonous, acute to subrostrate, shorter than or equalling sepals. *Seeds c.* 0·6 mm long, ecarinate; testa finely scalariform.



Open places in dry *Pinus* or *Pinus-Quercus* forest (Honduras), páramo (Costa Rica), and dry grassland, savanna, or lava flows (Panama); 1050–3820 m.

Honduras, Costa Rica (San José), Panama (Chiriquí, Coclé).

HONDURAS. Comayagua: Siguatepeque to Comayagua, Barranco El Socorro, 1400 m, 28 November 1958 (fl), *Hawkes, Hjerting & Lester* 2109 (C, F, K, S); near Guaimaea, Frica Sansón to Cerro Sansón, 18 February 1955 (fl), *Carlson* 3175 (F); near Siguatepeque, 1050 m, 7 January 1936 (fl & fr), *Yuncker, Dawson & Youse* 5569 (F, GH, K, MICH, MO, S, U). Distr. Central: near Tamara, 19 June 1970 (fl & fr), *Barkley & Ertha* 40743 (F, GH, MO). El Paraiso: *c.* 6 km N. of Güinope, 1400 m, 29 December 1962, *Williams, Molina & Williams* 23260 (BM, C, F, GH, MICH, MO, NY, P, S, US, W); between Manzaragua & San Lucas, 1500 m, 4 July 1962, *Molina* 10741 (F). Intibucá: 11 km S. of La Esperanza, 22 May 1970 (fr), *Hernández & Barkley* 40369 (GH); Morazan: near Hoya Grande, 1500 m, 28 July 1946 (fl & fr), *Williams & Molino* 10177 (F, MO); El Hatillo, 2000 m, 3 August 1978 (fl) *Trochez* 124 (BM, MO). Ocotepeque: Catarata de Belén, Gualcho, 15 km NE. de La Aldea, 1500–2000 m, 26 June–3 July 1976 (fl & fr), *Nelson* et al. 3772 (MO); Tegucigalpa: 2 km N. of the city, 30 January 1982 (fl & fr), *Blackmore & Heath* 1603 (BM).

NICARAGUA. Nuevo Segovia: 1 km N. of Dipilto, 1100 m, 16 June 1977 (fl & fr), *Neill* 2244 (BM, MO).

COSTA RICA. San José: 6 km NE. of Santa Maria de Dota, 1735 m, 21 December 1963 (fl & fr), *Jiménez* 1481 (F, NY, US); Páramos de l'Abejonal près de Ste Maria de Dota, 1500 m, 5 April 1890 (fl), *Pittier* 2279 (BM, P, US); Valle de los Conejos (lower), trail to Valle de los Leones, 3250–3450 m, 21–23 August 1971, *Burger & Gomez* P. 8204 (F).

PANAMA. Chiriquí: vicinity of Boquete, Llanos area just S. of town, 1050 m, 10 March 1963 (fl & fr), *Stern, Eyde &*

Ayensu 1934 (MICH, MO, US); between Volcán de Chiriquí and Cerro Aquacate, 1950–2160 m, 16 January 1971 (fl), *Wilbur & Teeri* 13310 (DUKE, F, MICH, MO); summit of El Barú, 3225–3474 m, 18 May 1976 (fl & fr), *Croat* 34927 (MO) ('*H. woodsonii*'). Coclé: between Las Margaritas y El Valle, 15 July & 8 August 1938 (fl), *Woodson, Allen & Siebert* 1758 (F, GH, MO).

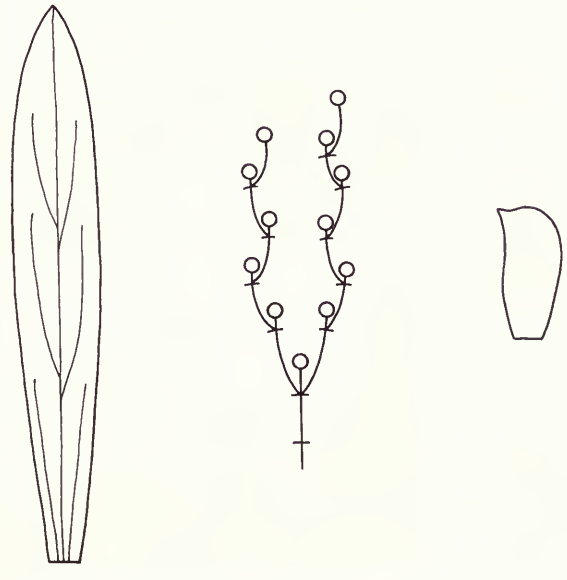
H. gnidioides varies widely with the habitat, having relatively broad, spreading leaves in moist places and narrow imbricate ones in drier areas. The mature upper leaves, however, are always relatively narrower than those of *H. chamaemyrtus*. The habit appears to be extremely variable, but this variation is based on two trends, viz. i) the multiplication of flowers by monochasial or sympodial or mixed branching in the secondary inflorescences (i.e. those formed above the first pseudodichotomy) and ii) the formation of lateral branches below this first dichotomy.

H. woodsonii, from exposed habitats at higher altitudes (2500–3800 m) in Panama, is a prostrate form which 'has a low depressed habit and forms dense interlaced mats' [Standley].

The most primitive form of *H. gnidioides* is in Honduras, whence there is a south-eastward reduction trend to Panama (omitting southern Nicaragua) ending in '*H. woodsonii*'.

83. **Hypericum eastwoodianum** I. M. Johnston in *Proc. Calif. Acad. Sci.* IV, **20**: 78(1931). Type: Mexico, Colima, Revilla Gigedo Islands, Socorro I., Grayson's Cove, 4 May 1925 (fr), *Mason* 1614 (CAS!-holotype; DS!, F!, GH!, MO!, NY!, US!-isotypes; P!-photograph).

Map 5.



H. insulare Eastw. in sched., non Fouc. & Mandon (1900).

H. silenoides sensu Rodríguez Jiménez in *C.r. Soc. Biogéogr.* **432**: 89, map 2 (1972), pro parte, in *Mems Soc. Cienc. nat. La Salle* **33**: 51 (1973), pro parte quoad syn. *H. eastwoodianum*.

Subshrub or shrublet 0·25–0·6 m tall, with taproot, bushy, erect; branches lateral and below inflorescence, strict or lower ascending, not rooting. *Stems* reddish-brown, 4-lined, ± ancipitous and ± densely gland-dotted when young, eventually subterete, cortex exfoliating in strips; internodes 3–8·5 mm long. *Leaves* sessile, spreading from base to subimbricate-ascending, longer than internodes, persistent (i.e. deciduous with cortex) or breaking off earlier above base; lamina 7–30 × 1–3·5 mm, linear or narrowly lanceolate to linear-oblanceolate, margin ± strongly revolute, entire, not cucullate, midrib prominent or not and smooth beneath, usually papillose above, glaucous beneath and sometimes slightly so above, coriaceous; apex obtuse or apiculate to rounded, base angustate to parallel-sided, free; basal vein 1, with 2–3 pairs of ascending lateral branches sometimes visible beneath, tertiary reticulation absent; laminar glands dense, not prominent. *Inflorescence* (1)5–30-flowered, usually ± dense (c.f. 84. *peninsulare*), branching dichasial/monochasial (after 1(2) nodes), without or rarely with subsidiary branches from node below; peduncle and pedicels 1–4·5 mm long; bracts and bracteoles linear. *Flowers* 4–6(–8?) mm in diam., stellate. *Sepals* 3–5 × 1–1·5 mm, subequal, oblanceolate to oblong or elliptic-oblong or lanceolate, acute; veins 3–5, unbranched, all becoming ± prominent; glands all linear or punctiform in upper ¼. *Petals* bright yellow to pale orange, *c.* 5–6 × 2–2·5 mm, 1·2–1·5 × sepals, oblanceolate to oblong; apiculus obtuse; glands linear, distally interrupted. *Stamens* (15–)20–40(–50, fide Johnston), longest 2–3 mm long, *c.* 0·5 × petals, fascicles not distinct. *Ovary* 1·5–2 × 1 mm, ovoid-ellipsoid; styles 3, (0·6)1–2·5 mm long, (0·4–) 0·7–1 × ovary, spreading; stigmas broadly capitate to peltate. *Capsule* 3·5–4(–4·5) × 1·5–2·3 mm, narrowly ovoid-cylindric, trigonous, acute to acuminate, shorter than or equalling or rarely exceeding sepals. *Seeds c.* 0·6 mm long, ecarinate; testa finely scalariform.

Sheltered places in dry rocks; 200–700 m (Socorro I.), 1475–2100 m (mainland).

Mexico (Colima: Revilla Gigedo Islands – Socorro I., Jalisco, Zacatecas).

MEXICO. Colima: Socorro I., S. of Mt. Evermann, Cerro de los Dientes, *c.* 700 m, 11 March 1957 (fl & fr), *Moran* 5782 (CAS, DS, MEXU, MICH, NY, SD, US); Socorro I., 27 May–3 July 1903 (fr), *Barkelew* 229 (CAS, DS, GH, US) – '*H. insulare*'. Jalisco: Municipio de Talpa, entre Cuala y la Cumbre Blanca, 1475 m, 2 September 1971 (fr & fr), *González Tamayo* 336 (MICH). Zacatecas: Sierra de los Huicholes, 12–18 km SW. of San Juan Capistrano and 20–25 km SW. of Rio Atenco crossing (Chalapagana), 2100 m, 12, 14 January 1975 (fr), *McVaugh* 25786 (MICH).

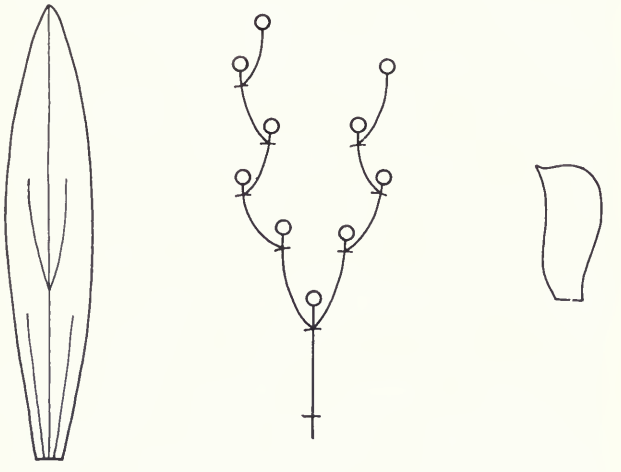
H. eastwoodianum is related to the most primitive form of *H. gnidioides*, differing essentially from it in having capsules longer than the sepals and styles relatively longer than the ovary. The leaves are usually spreading, rarely closely imbricate, the lateral branches more numerous, and the inflorescence separated from the foliage by an elongated internode. It is also very closely related to 84. *H. peninsulare* (q.v.).

H. eastwoodianum occurs in three isolated populations, two on the central Mexican mainland (Jalisco, Zacatecas), and the third on Socorro Island, which lies 416 km from the tip of Baja California and 512 km from Cape Corrientes (in Jalisco). The populations are all distinct from one another but, apart from the Socorro Island one, are represented by effectively single collections. It seems unwise, therefore, to attempt to recognize any of the mainland ones taxonomically at present, although the shorter, subimbricate, glaucous

leaves and capsules exceeding the sepals of the Zacatecas population may prove to be constantly distinct.

84. **Hypericum peninsulare** Eastw. in *Leafl. West. Bot.* **3**: 257 (1943). Type: Mexico, Baja California Sur, Sierra de la Laguna, *c.* 1500 m, 13 October 1941 (fl & fr), *Hammerley* 382 (CAS!-holotype; DS!-isotype).

Map 5.



H. silenoides sensu Rodríguez Jiménez in *C.r. Soc. Biogéogr.* **432**: 89, map 2 (1972), pro parte, in *Mems Soc. Cienc. nat. La Salle* **33**: 51 (1973), pro parte quoad syn. *H. peninsulare*.
H. gramineum sensu Rodríguez Jiménez in *C.r. Soc. Biogéogr.* **432**: 92, map 8 (1972), pro parte, in *Mems Soc. Cienc. nat. La Salle* **33**: 97 (1973), pro parte quoad spec. *Brandegee* 12 September 1892.

Subshrub or perennial herb 0·15–0·35 m tall, with taproot; branches lateral and below inflorescence, strict, also basal or near-basal, not rooting, erect from spreading geniculate base, often forming ring round stem base. *Stems* reddish, persistently 4-lined, ± ancipitous and densely gland-dotted when young, cortex exfoliating in strips; internodes 6–30(–45) mm long. *Leaves* sessile, all spreading from base or upper erect, longer to shorter than internodes, persistent (i.e. deciduous with cortex) or lower breaking off earlier above base; lamina 5–23 × 1–4·5(–6·5) mm, linear to narrowly elliptic or narrowly elliptic-oblong or lanceolate, margin ± strongly revolute, entire or subdenticulate, not cucullate, midrib prominent and smooth beneath, finely papillose or almost smooth above, glaucous beneath, subcoriaceous to chartaceous; apex acute to obtuse, base parallel-sided to cuneate or rounded-amplexicaul, free; basal veins 1(3), without or with 2–4 pairs of ascending lateral branches visible beneath, tertiary reticulation absent; laminar glands dense, often slightly prominent beneath. *Inflorescence* 5–9-flowered, ± lax (c.f. 83. *eastwoodianum*), branching dichasial/monochasial (after 1(2) nodes), with subsidiary branches from node below; peduncle and pedicels 1·5–3(–5) mm long; bracts and bracteoles linear. *Flowers* 5–15 mm in diam., stellate. *Sepals* 3–5(–6) × 0·8–1·5 mm, subequal, narrowly oblong or narrowly elliptic-oblong to lanceolate, acute to subacute; veins 3, unbranched, all becoming ± prominent; glands all linear or punctiform in upper ¼ to ⅓. *Petals* bright yellow, tinged red in bud, fading pinkish-orange, 5–7·5 × 1·5– *c.* 2·5 mm, 1·2–2 × sepals, oblanceolate to oblong; apiculus obtuse?; glands linear, distally interrupted. *Stamens* 15–22, longest 2·5–3 mm long, *c.* 0·5 × petals, fascicles not distinct. *Ovary* 1·2 × 0·5–1 mm, narrowly ovoid; styles 3, 1·5–2·5 mm long, 1·2–1·5 × ovary, spreading; stigmas broadly capitate. *Capsule* 4–7 × 2–3 mm, ovoid-ellipsoid to cylindric-ellipsoid or ellipsoid, terete, acute to acuminate, exceeding or rarely equalling sepals. *Seeds* 0·7–0·8 mm long; testa finely scalariform.

Open but sheltered dry habitats: meadows, among rocks, and in *Pinus-Quercus* forest; (200–)1400–1800 m.

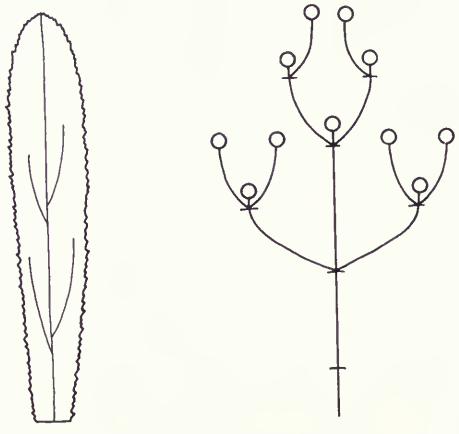
Mexico (Baja California Sur, extreme south).

MEXICO. Baja California Sur: Sierra de La Laguna E. of Todos Santos, 1800 m, 27 December 1947 (fl & fr), *Carter & Kellogg* 2419 (BM, UC n.v.); Sierra de la Victoria, La Laguna Meadow, 20 August 1955 (fl & fr), *Chambers* 915 (DS, MEXU); Sierra El Taste, 1400–1500 m, 10 November 1955 (fr), *Carter & Chisaki* 3543 (CAS); ibid., 12 September 1892 (fr), *Brandegee* s.n. (US).

The more shrubby form of *H. peninsulare* is very similar to 83. *H. eastwoodianum*, and there could be a case for treating these taxa as subspecies. The style length relative to the ovary, however, provides an absolute distinction (longer in *peninsulare*, equal or shorter in *eastwoodianum*), and the trends in branching pattern are different. I prefer, therefore, to treat them as separate species. Whereas the branches in *H. eastwoodianum* are never basal, in *H. peninsulare* there are usually several basal or near-basal shoots forming a cupuliform 'rosette' (when young), as each emerges horizontally and then makes a right-angled bend to become erect. Again, *H. eastwoodianum* is always woody and usually has a more or less condensed inflorescence, whereas *H. peninsulare* ranges from shrublet to perennial (or biennial?) with a corresponding morphocline in the inflorescence from rather lax to very lax.

85. **Hypericum beamanii** N. Robson, **sp. nov.**

Map 5.



H. galino S. F. Blake affinis, sed folis tenuiter chartaceis margin nonnihil recurvis valde undulato-denticulatis, floribus ut videtur minoribus, differt. Type: Guatemala, Sololá, Volcán Atitlán, near summit of mountain *c.* 3535 m, 10 August 1960 (fl), *Beaman* 4062 (GH!-holotype; US!-isotype; MSC).

Shrublet c. 0·28 m tall, with taproot, erect and bushy or somewhat diffuse; branches basal and lateral, strict or erect from decumbent to prostrate rooting base. *Stems* reddish-brown, 4-lined, ancipitous and ± densely gland-dotted when

young, eventually 2-lined to subterete, cortex exfoliating in strips; internodes 3–8 mm long. *Leaves* sessile, spreading from base, longer than internodes, persistent, becoming deflexed and withering; lamina 8–18 × 1·3–3 mm, linear or narrowly elliptic to narrowly oblanceolate, margin slightly recurved, strongly undulate-denticulate, not cucullate, midrib slightly prominent beneath, smooth on both sides, slightly paler beneath, not glaucous, thinly chartaceous; apex acute to apiculate or obtuse, base narrowly cuneate to angustate, free; basal vein 1, with 1–3 pairs of ascending lateral branches, tertiary reticulation absent; laminar glands rather dense, not prominent. *Inflorescence c.* 5?-flowered, branching dichasial/monochasial, with subsidiary branches from 1–2 nodes below; peduncle and pedicels 2–4 mm long; bracts and bracteoles linear. *Flowers* immature, in bud only. *Sepals* (immature?) 2·5–3·5 × 0·5–0·7 mm, subequal, narrowly oblong, acute; veins 3, unbranched; glands linear. *Petals* tinged red in bud.

Trough-like depression near fumerole vent; *c.* 3535 m.

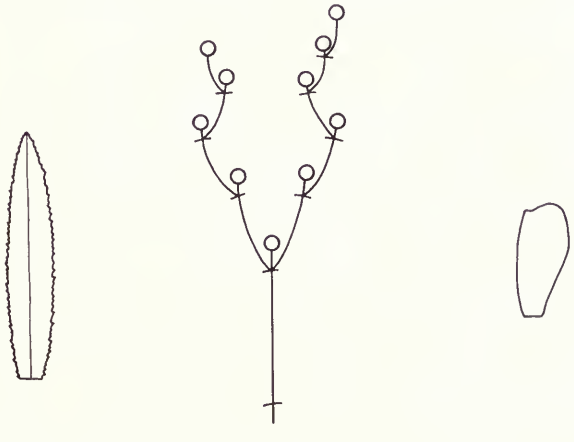
Guatemala (Sololá).

GUATEMALA. Sololá: Volcán Atitlán, near summit of mountain, *c.* 3535 m, 10 August 1960 (bud), *Beaman* 4062 (GH, MSC n.v., US).

The above single collection represents a quite distinct, isolated species whose affinities lie with 83. *H. eastwoodianum* and 85. *H. galinum*. Its leaves are thinner than those of either species, but the undulate-denticulate margin is reminiscent of *H. galinum*. Mature flowers and fruits would enable a more complete differential diagnosis to be written.

86. **Hypericum galinum** S. F. Blake in *J. Wash. Acad. Sci.* **14**: 289 (1924); Rodríguez Jiménez in *C.r. Soc. Biogéogr.* **432**: 91, map 5 (1972), in *Mems Soc. Cienc. nat. La Salle* **33**: 116, ff. 1h, 14B (1973). Type as for *H. denticulatum* Kunth, non Walter.

Fig. 11B, Map 5.



H. denticulatum Kunth in Humb., Bonpl. & Kunth, *Nov. gen. sp.* **5**: 191, t. 458 (1822); D. Dietr., *Syn. pl.* **4**: 1237 (1847); S. Watson in *Proc. Am. acad. Arts Sci.* **17**: 330 (1882); Urbina, *Cat. pl. mexic.*: 19(1897); R. Keller in *Bull. Herb. Boissier* II, **8**: 180(1908), in Engl. & Prantl, *Nat. Pflanzenfam.* 2nd ed. **21**: 183 (1925), non *H. denticulatum* Walter (1788). Type: Mexico, Guanajuato, 'Guanaxuato Mexicorum', 1944 m ('1080 hex') September 1803, *Humboldt & Bonpland* s.n. (P!-holotype).

Brathys denticulata (Kunth) Spach in *Annls Sci. nat.* (Bot.) II, **5**: 367 (1836).

Icon: Humb., Bonpl. & Kunth, tom. cit.: t. 458 (1822).

Shrublet 0·2–0·4 m tall, with taproot, fastigiate, erect; branches lateral and sometimes basal, often opposite, strict, not rooting. *Stems* 4-lined, reddish-brown, ancipitous, and densely gland-dotted when young, eventually terete, cortex exfoliating in strips; internodes 3–20 mm long. *Leaves* sessile, erect to appressed, imbricate, shorter to longer than internodes, persistent; lamina (5–)8–15(–20) × 1–2 mm, linear to narrowly elliptic-oblong, margin recurved or plane to subincurved, retorse-denticulate to (rarely) subentire, not or slightly cucullate, midrib prominent or not and sometimes denticulate beneath, smooth, concolorous, not or slightly glaucous, coriaceous; apex acute to subacute, base parallel-sided or slightly broadened, free; basal vein 1, not or obscurely branched, tertiary reticulation absent; laminar glands dense, not prominent or slightly so beneath. *Inflorescence* 1–12-flowered, branching dichasial/monochasial, often with subsidiary inflorescences or inflorescence branches from node(s) below; peduncle and pedicels 1·5–3 mm long, not incrassate upwards; bracts and bracteoles linear-subulate. *Flowers* 8–10 mm in diam., stellate. *Sepals* 2·5–4 × 0·8–1·2 mm, unequal, oblong-spathulate or narrowly oblong to lanceolate, obtuse to acute, ± cucullate; veins 3–5(7), unbranched, all becoming prominent; glands linear. *Petals* bright yellow, tinged reddish, 4–6 × 2–2·5 mm, *c.* 1·5 × sepals, oblanceolate; apiculus acute; glands few, punctiform. *Stamens* 10–14, longest 3–4 mm long, *c.* 0·7 × petals, fascicles 3, subdistinct. *Ovary c.* 1·5 × 1 mm, narrowly ellipsoid; styles 3, 1–1·5 mm long, *c.* 0·7–1 × ovary, suberect; stigmas capitate. *Capsule* 5–6 × 2–2·5 mm, narrowly ovoid-cylindric, acute, 2–3 × as long as sepals, sometimes with 1–2 vesicles. *Seeds* 0·5 mm long, ecarinate; testa finely scalariform.

Dry, rocky, calcareous areas; 1800–2500 m.

Mexico (Guanajuato, San Luis Potosí).

MEXICO Guanajuato: Xichú road, 20 August 1947 (fr), *Kenoyer* 2324 (GH); Jaral, 10 August 1885 (fl & fr), *Schumann* 350 (P). San Luis Potosí: chiefly in region of San Luis Potosí, 1800–2400 m, 1878 (fr), *Parry & Palmer* 72 (BM, G, GH, K, MO, NY, P, US); Cerro Tepetate, SW. of San Luis Potosí, 2400–2500 m, 27 July 1934 (fr), *Pennell* 17655 (GH, MEXU, NY, US); San Luis Potosí, August, October 1877 (fl & fr), *Schaffner* 607 pp. (GH, K, MEXU, NY), ibid., 1879 (fl & fr), *Schaffner* 511 (BM, G, MICH, P, US).

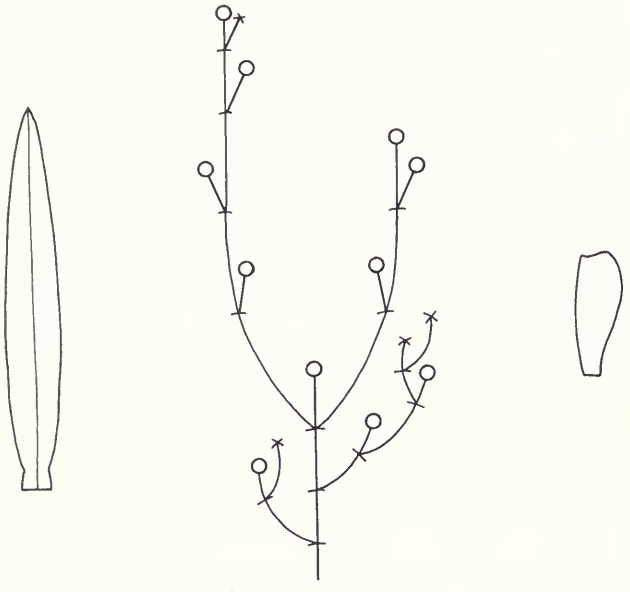
H. galinum is closely related to the mainland populations of 83. *H. eastwoodianum*, differing from them inter alia by the plane to incurved leaves with denticulate margin and the elongate capsules.

87. **Hypericum drummondii** (Grev. & Hook.) Torrey & A. Gray, *Fl. N. Amer.* **1**: 165 (1838); Steudel, *Nomencl. bot.* 2nd ed. **1**: 787 (1840); A. Gray, *Manual* 5th ed.: 86(1856) et eds subseq.; Chapman, *Fl. South. U.S*: 42 (1872); Coulter in *Bot. Gaz.* **11**: 110 (1886); Britton, N. L. & Brown, A. H. *Ill. fl. n. U.S.* **2**: 435, f. 2462 (1897), 2nd ed. **2**: 536 (1913), 3rd ed. **2**: 544 (1952); C. Mohr in *Contr. U.S. natn. Herb.* **6**: 621 (1901); R. Keller in *Bull. Herb. Boissier* II, **8**: 180 (1908), in Engl. & Prantl, *Nat. Pflanzenfam.* 2nd ed. **21**: 183 (1925); Rodríguez Jiménez in *C.r. Soc. Biogéogr.* **432**: 88, map 1 (1972), in *Mems Soc. Cienc. nat. La Salle* **33**: 109, ff. 1g, 14c, t. 1B (1973); D. H. Webb, *Biosyst. study Hypericum sect. Spachium in eastern N. Amer.*: 119 (1980). Type: U.S.A., Missouri, St. Louis, 1832 (fl & fr),

Drummond (K!-holotype; BM!, GH!, P-isotypes). The lectotype of *H. drummondii* chosen by Rodríguez Jiménez is superfluous, as the holotype is at Kew.

Fig. 11A, Map 7.

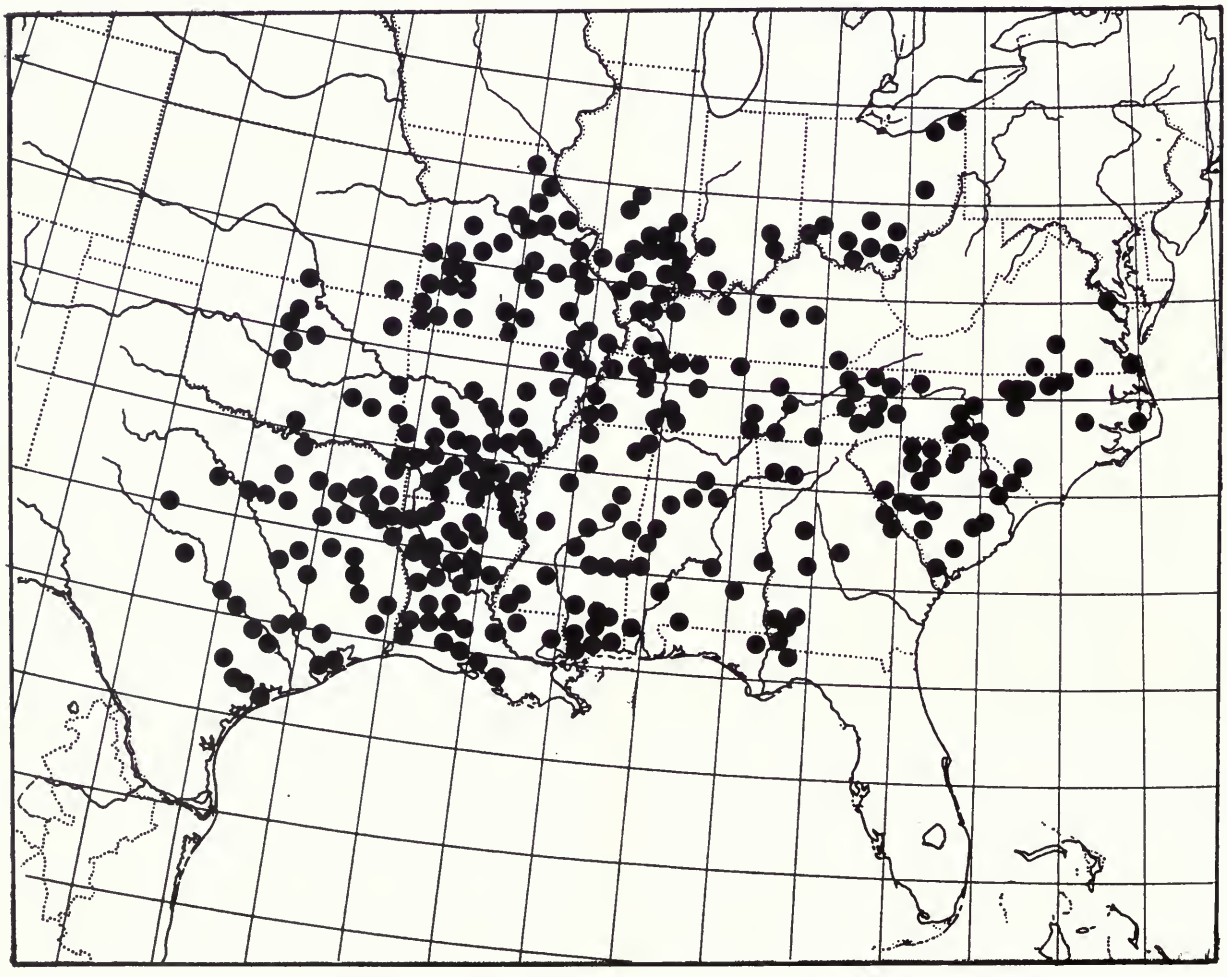
Sarothra drummondii Grev. & Hook., *Bot. misc.* **3**: 236, t. 107 (1833); Small, *Fl. s.e. U.S.*: 791 (1903); Y. Kimura in Nakai & Honda, *Nova fl. jap.* **10**: 48, 232 (1951).



Brathys drummondii (Grev. & Hook.) Spach in *Annls Sci. nat.* (Bot.) II, **5**: 367 (1836).

Icon: Rodríguez Jiménez in *Mems Soc. Cienc. nat. La Salle* **33**:110, f. 14C (1973).

Annual herb 0·1–0·8 m tall, with taproot, erect; branches lateral from upper part of stem, strict, sometimes opposite, not rooting. *Stems* eventually orange-brown, 4-lined, ancipitous above, densely glandular, cortex exfoliating in strips; internodes 7–12 mm long. *Leaves* sessile, erect to suberect, longer to shorter than internodes, persistent; lamina 5–22 × 0·5–1 mm, linear or linear-subulate to linear-lanceolate, margin recurved to ± revolute, smooth, not cucullate, midrib prominent, smooth, concolorous, pale but not glaucous, subcoriaceous; apex acute to obtuse, base parallel-sided, free; basal vein 1, unbranched, tertiary reticulation absent; laminar glands dense, not prominent. *Inflorescence* 1–7(–12)-flowered, branching dichasial/monochasial, with subsidiary inflorescences and inflorescence branches from up to 6 nodes below; peduncle and pedicels 1–4 mm long, not incrassate upwards; bracts foliar, gradually reduced. *Flowers* 5–8 mm in diam., stellate. *Sepals* 3–7 × 0·7–1·3 mm, subequal, narrowly oblong to linear-lanceolate, acute; veins 3–5, unbranched, all becoming ± prominent; glands punctiform in upper ⅛–½. *Petals* orange-yellow, 4–7 × (1·5)2–2·5 mm, about equalling



Map 7 Sect. 29: 87. *H. drummondii.* Data from Webb (1980).

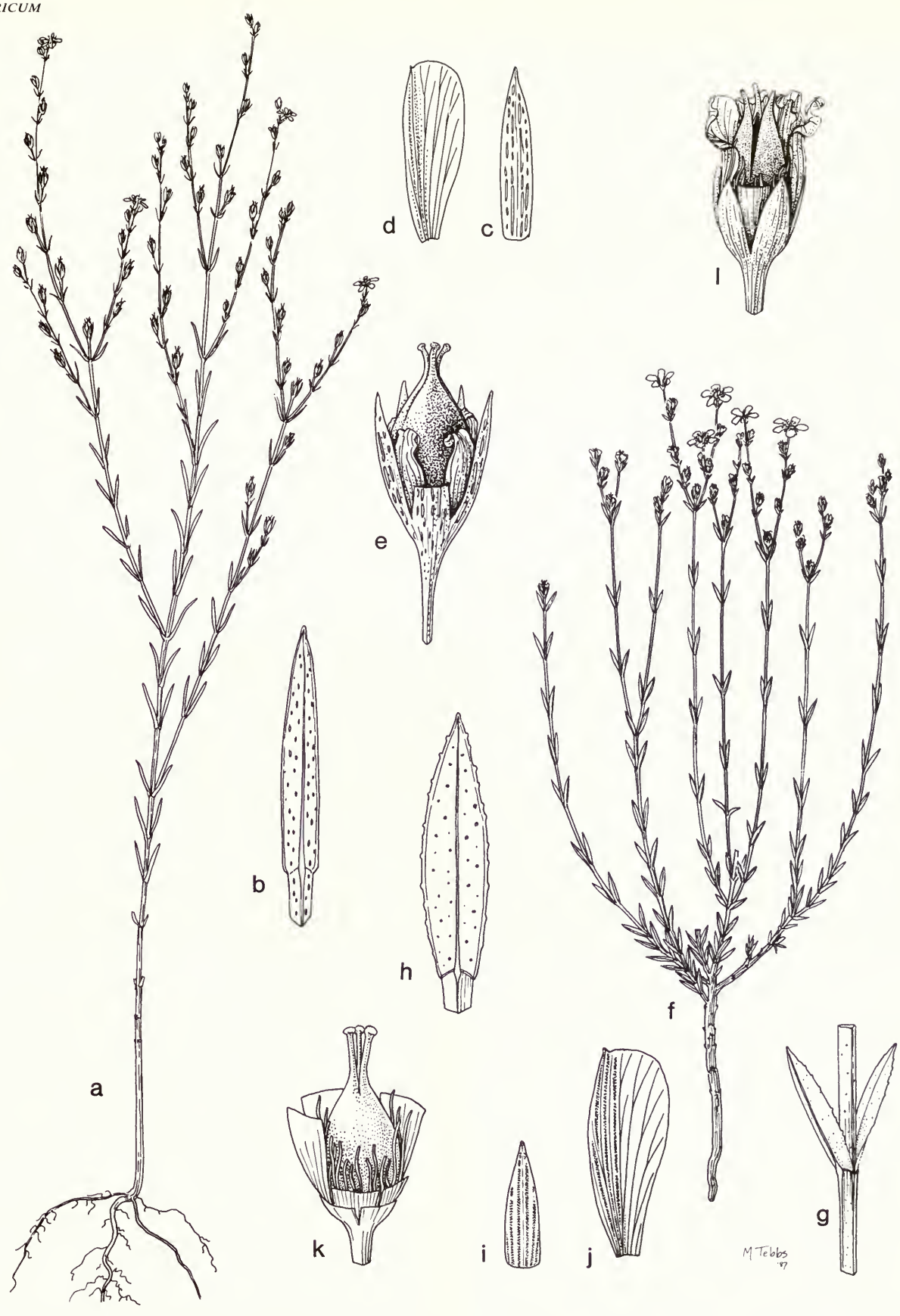


Fig. 11 A. *H. drummondii*: (a) habit; (b) leaf; (c) sepal; (d) petal; (e) young capsule. B. *H. galinum*: (f) habit; (g) stem with leaves; (h) leaf; (i) sepal; (j) petal; (k) young capsule with sepals, petals, and stamen filaments (partly cut away); (l) mature capsule (a, f × ½; b, g × 2; c–e × 5; h–l × 4). A. *D. & H. Correll* 35993; B. *Shaffner* 607 p.p.

sepals, oblong; apiculus subacute, small; glands distally punctiform? *Stamens* 10–22, longest 2·5–3 mm long, *c.* 0·5 × petals, obscurely fascicled or irregularly spaced. *Ovary c.* 1 × 0·5 mm, narrowly ovoid; styles 3, (0·5–)0·8–1·5 mm long, *c.* 1–1·5 × ovary, spreading; stigmas peltate. *Capsule* (3·5–)4·5–6(–7) × 2·5–3 mm, narrowly ovoid to ovoid-cylindric, acute, slightly shorter to slightly exceeding sepals. *Seeds* 0·9–1·1 mm long, ecarinate; testa finely scalariform. 2n = 24 (n = 12, Webb, 1980).

Dry, sandy or clay soils in open woods, old fields, and waste or rocky places; 0–1040 m.

Eastern and south-eastern U.S.A. (Texas to NW. Florida, north to Virginia and Ohio, west to Missouri, Kansas, and Oklahoma).

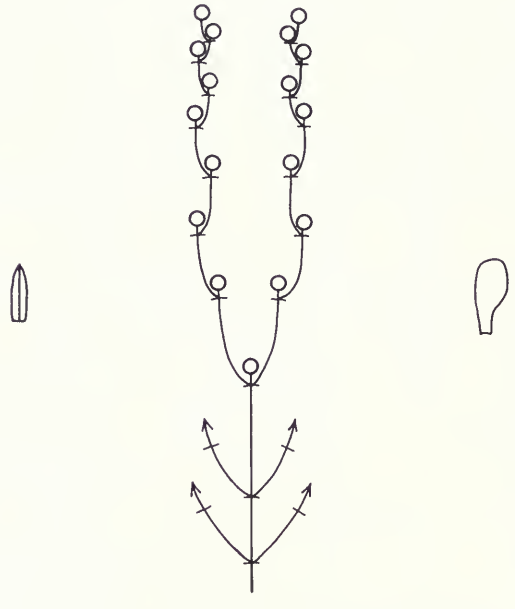
U.S.A. Alabama: *Jefferson Co., Red Mountain, 5 October 1898, *Canby* 13 (MO, NY, US); *Tuscaloosa Co., E. of University campus, 9 September 1933, *Harper* 3108 (GH, MICH, MO, NCU, NY). Arkansas: Ashley Co., Hamburg, 75 m, 27 September 1937 (fr), *Demaree* 16376 (H); Independence Co., N. of Cushman, 1 September 1960 (fl & fr), *Adams* 671 (K). Florida: Apalachicola R., August (fr), *Curtiss* 256 (BM, K, P); *Jackson Co., L. Seminole, N. of Sneeds, 9 September 1958, *Godfrey* 57779 (GH). Georgia: Richmond Co. ?, circa urbem Augusta, n.d. (fr), *Olney & Metcalf* 15(K); *Taylor Co., Butler, 1040 m, 14 September 1908, *Harper* 2239 (GH, MO, NY, P, US). Illinois: *White Co., S. of Norris City, 28 July 1951, *Ahles* 4680 (ILL); no precise locality, August 1836 (fl), *Riedl* s.n. (BM). Indiana: *Jefferson Co., along Rd. 3, *c.* 2·4 km N. of Rd. 256, 27 October 1945, *Friesner* 20247 (MICH, NY, SMU); ? Co., Sapulpa, 21 September 1895 (fl & fr), *Bush* 1385 (K, P). Kansas: *Chantaqua Co., no precise locality, 1896, *Hitchcock* 635 (MO, NY, P, US); *Cherokee Co., 2·4 km S. of Galena, 12 October 1968, *Magrath & Johnson* 3570 (NY). Kentucky: *Madison Co., 3·2 km NE. of Big Hill, 6 August 1940, *Wharton* 5671 (MICH). Louisiana: *Sabine Par., 7·4 km S. of Many, 9 September 1955, *Shinners* 21621 (GH, ILL, SMU); Calcasieu Par., L. Charles, 11 September 1915 (fl & fr), *Palmer* 8524 (K); Ouachita Par., Windsor, 13 October 1915 (fr), *Palmer* 8936 (K). Mississippi: Jackson Co., Biloxi, 7 October 1897 (fl), *Tracy* 3577 (BM, GH, MO, NY, US, W); *Perry Co., Maxie, De Soto National Forest, P.O. Beaumont, 22 October 1954, *Demaree* 3257 (GH, SMU). Missouri: Stoddard Co., Bernie, 2 August 1895 (fl), *Bush* 85 (K); Jasper Co., near Webb City, 20 August 1927 (fl & fr), *Palmer* 32589 (K, P). North Carolina: Buncombe Co., Biltmore, 17 August 1897 (fl & fr), *Herb. Biltmore* 526b (BM, GH, MICH, MO, NY, NCU, US, W, Z); Lee Co., 6·4 km N. of Sanford, near US 1, 18 October 1966 (fr), *Radford* 45337 (BM, H). Ohio: *Adams Co., L. Adams, 10 October 1956, *Braun* s.n. (US); *Pickaway Co., Pickaway Township, 20 August 1937, *Bartley & Pontius* 622 (NY). Oklahoma: Le Flore Co., Poteau, 14 July 1915 (fl), *Palmer* 8290 (K); *Pawnee Co., Cleveland, 1 October 1914, *Palmer* 6382 (MO). South Carolina: *Berkeley Co., along S.C. 45, Jamestown, Santee Wool-combing Mill, 5 July 1957, *Ahles & Haesloop* 30826 (NCU, SMU); *Union Co., 3·2 km E. of Carlisle, 25 August 1956, *Freeman* 56678 (NCU). Tennessee: Dyer Co., N. of Roellin, 16 August 1947 (fl), *Sharp & E. & A. Clebsch* 6299 (BM, TENN); *Putnam Co., N. of Double Springs, 21 August 1947, *Norris & Shanks* 7312 (NCU, TENN). Texas: Galveston Co., *c.* 8 km NE. of Port Bolivar, 0·4 km behind beach, 9 August 1968 (fr), *D. & H. Correll* 35993 (BM); Lee Co., *c.* 13 km S. of Dime Box, 26 August 1979 (fl & fr), *Fryxell* 3123 (BM). Virginia: *Greenville Co., near Three Creek, N. of Emporia, 18 September 1938, *Fernald & Long* 9378 (GH, NY, US); *Norfolk Co., along RR, 0·8 km W. of Bowers Hill, 6 August 1944, *Hubricht* B2571 (MO).

H. drummondii is most closely related to the possibly annual form of *H. gnidioides* from Honduras, being smaller or narrower in all parts except apparently the seeds.

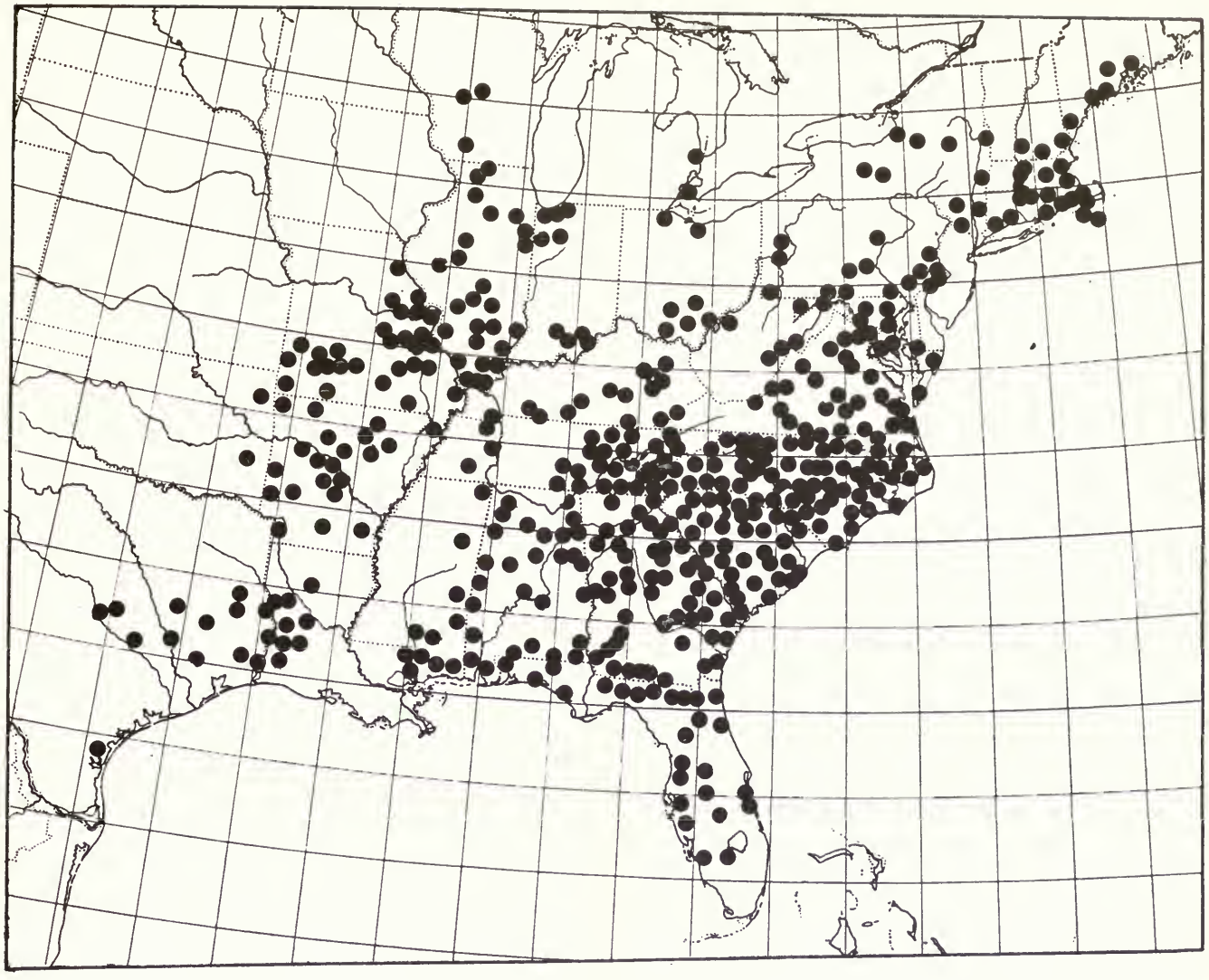
The wide disjunction in area between Honduras and south-eastern U.S.A. is almost paralleled by that of *H. gymnanthum* (south-eastern U.S.A. to Guatemala, see p. 115).

88. **Hypericum gentianoides** (L.) Britton, Sterns & Pogg., *Prelim cat.*: 9 (1888); N. L. Britton & A. H. Brown, *Ill. Fl. n. U.S.* 3rd ed. **2**: 544 (1952); Lyman B. Smith in *J. Wash. Acad. Sci.* **48**: 313 (1958); Heine in *Bauhinia* **2**: 76 (1962); N. Robson in *Fl. Europaea* **2**: 269 (1968); Utech & Iltis in *Wisconsin Acad. Arts Sci. Lett.* **58**: 346 (1970); Rodríguez Jiménez in *C.r. Soc. Biogéogr.* **432**: 89, map 2 (1972), in *Mems Soc. Cienc. nat. La Salle* **33**: 112, ff. 2h, 3d (1973), in *Fl. Ill. Catar., Hipericác.*: 9 (1980), pro parte, excl. syn. *Sanidophyllum cumulicola* et *Hypericum cumulicola* et *H. aphyllum* et *Sarothra aphyllum*; D. H. Webb, *Biosyst. study Hypericum sect. Spachium* in *eastern N. Amer.*: 137 (1980), pro parte excl. syn. *H. aphyllum*; J. M. Gillett & N. Robson in *Canad. natn. Mus. nat. Sci., Publs Bot.* **11**: 11, tt. 4, 16, map 3 (1981). Type as for *Sarothra gentianoides* L.

Maps 5, 8, 9, 38.



Sarothra gentianoides L., [*Nova pl. gen.* II: 14 (1751)] *Sp. pl.*: 272 (1753), in *Amoen. Acad.* **3**: 11(1756); N. L. Britton & A. H. Brown, *Ill. fl. n. U.S.* **2**: 436, f. 2463 (1897), 2nd ed. **2**: 536 (1913); Tempère in *Act. Soc. linn. Bordeaux* **83**: 136 (1932); Y. Kimura in Nakai & Honda, *Nova fl. jap.* **10**: 231 (1951). Type: U.S.A., *Kalm* in Herb. Linn. 391: 1 (LINN!-lectotype – Rodríguez Jiménez, 1973). There are three elements in the protologue from which the lectotype must be chosen: 1) the *Kalm* specimen (LINN), on which Linnaeus based the monotypic genus *Sarothra* (*Gen. Nov.*: 1075 (1751)); 2) *Clayton* 110 (BM), cited by Gronovius in



Map 8 Sect. 29: 88. *H. gentianoides*, natural range. Data from Webb (1980). See also Maps 5 (p. 32), 9 (p. 46) and 38 (p. 123).

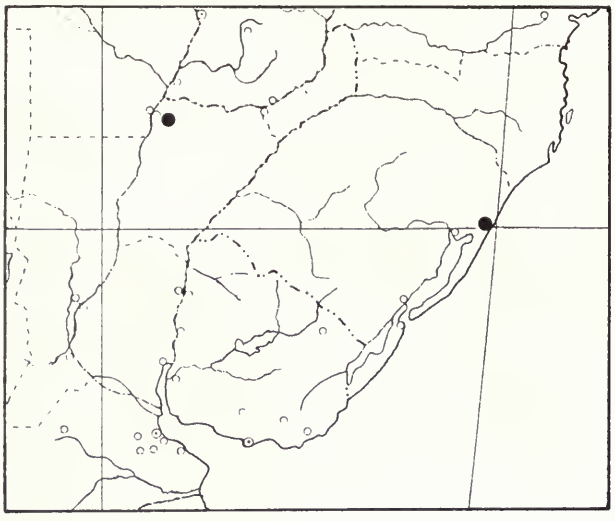
Fl. Virg.: 29 (1739); 3) a reference to Plukenet, *Mant.*: 43, t. 342, f.4 (1700), based on a *Krieg* specimen (BM-H.S. **92**: 43, also **102**: 162). Gillett & Robson (1981) selected *Clayton* 110 as lectotype without comment; but Rodríguez Jiménez (1973) had already cited *Kalm* s.n. as 'Type'. Since elsewhere in this work she indicates lectotypes and neotypes, there is room for doubt that she did, in fact, intend to choose a lectotype. Nevertheless, Webb (1980, ined.) followed her in citing *Kalm* s.n. but stated that a strong argument could be made for selecting *Clayton* 110. Reveal et al. (1987: 217) pointed out that, being the basis of the genus *Sarothra*, the *Kalm* specimen is the better lectotype; but, not knowing of the earlier 'choice' by Rodríguez Jiménez, they said that the choice of *Clayton* 110 could not be overturned. In the circumstances, however, it seems best to do so by crediting Rodríguez Jiménez with the intention of choosing a lectotype. In this way the type of the monotypic genus and its species become one and the same.

H. nudicaule Walter, *Fl. carol.*: 190 (1788); Coulter in *Bot. Gaz.* **11**: 111 (1886)[6]; R. Keller in *Bull. Herb. Boissier* II, **8**: 179 (1908), in clav. (sphalm. [auct.] Rob Keller), in Engl. & Prantl, *Nat. Pflanzenfam.* 2nd ed. **21**: 181 (1925). Type: U.S.A., Carolina, *Walter* f. 60 no. 649 (BM!).

H. sarothra Michaux, *Fl. bor.-amer.* **2**: 79 (1803), nom. illegit. (Art. 63); Pursh, *Fl. Amer. sept.* **2**: 378 (1814); Torrey & A. Gray, *Fl. N. Amer.* **1**: 165 (1838); Walp., *Repert. bot. syst.* **1**: 387 (1842); D. Dietr., *Syn. pl.* **4**: 1235 (1847); A. Gray, *Manual* 5th ed.: 86 (1856) et eds subseq.; Chapman, *Fl. South. U.S.*: 42 (1872); Chodat & Hassler in *Bull. Herb. Boissier* II, **3**: 1126 (1903). Type as for *Sarothra gentianoides*.

Sarothra hypericoides Nutt., *Gen. N. Amer. pl.* **1**: 204 (1818), nom. illegit. (Art. 63); W. P. G. Barton, *Fl. N. Amer.* **3**: 59, t. 92 f. 1 (1823). Type as for *S. gentianoides* L.

[6]Coulter cited Linnaeus's reference to *Pluk. alm.* 189 under *H. setosum* as a synonym of *H. nudicaule*. Plukenet's description (*Hypericum virginianum parvum fruticosum, ramulis equiseti. Planta est bicapsularis ex flore pentapetala luteo.*) certainly could apply to *H. gentianoides*. His specimen, however, is lacking at BM; and in any case *H. setosum* is lectotypified by a Gronovius specimen (see Robson in *Taxon* **29**: 271 (1980)).



Map 9 Sect. 29: 88. *H. gentianoides*, South American range.

Brathys gentianoides (L.) Spach, *Hist. nat. vég.*, *Phan.* **5**: 455 (1836), in *Annls Sci. nat.* (Bot.) II, **5**: 367 (1836).

Icon: J. M. Gillett & N. Robson in *Canad. natn. Mus. nat. Sci., Publs Bot.* **11**: 12, t. 4 (1981).

Annual herb 0·07–0·6 m tall, with taproot, erect; branches lateral, from upper two-thirds or from most nodes, strict, mostly opposite (at least lower ones), wiry, not rooting. *Stem* eventually orange- to reddish-brown, 4-lined, ancipitous above, densely glandular, cortex exfoliating in strips; internodes 3–20 mm long. *Leaves* sessile, appressed, canaliculate or sometimes scale-like, shorter than internodes, persistent; lamina 1–4 × 0·4–0·6 mm, all very narrowly triangular-subulate to linear-subulate or first two pairs broader, margin incurved, smooth, ± cucullate, midrib slightly prominent, smooth, concolorous, not glaucous, subcoriaceous to chartaceous, apex obtuse to rounded, base parallel-sided or slightly broadened, free; basal vein 1, unbranched, tertiary reticulation absent; laminar glands often in a single row, not prominent. *Inflorescence* 1–24-flowered, usually pyramidal overall, branching dichasial/monochasial or often wholly monochasial, with subsidiary inflorescences and inflorescence branches from most or nearly all nodes below; pedicels 1–2·5 mm long, not incrassate upwards; bracts foliar, not reduced. *Flowers* 3–5 mm in diam., stellate. *Sepals* 1·5–2·5 × 0·4–0·8 mm, unequal, lanceolate to narrowly oblong or linear-lanceolate, acute; veins 3, unbranched, all becoming ± prominent; glands linear. *Petals* orange-yellow to yellow, tinged red in bud, 2–3·3(–4) × 0·8–1·2 mm, *c.* 1·3 × sepals, oblong; apiculus almost absent; glands distally punctiform. *Stamens* 5–10(11), longest 1·5–2 mm long, *c.* 0·5–0·65 × petals, obscurely 5-fascicled or 5 single. *Ovary* 1–1·5 × 0·5–0·8 mm, narrowly ovoid-trigonous; styles 3, 0·8–1·2 mm long, *c.* 0·8 × ovary, spreading; stigmas broadly capitate. *Capsule* 4–5 × 1–1·2 mm, very narrowly cylindric-conic, acute, 2–3 × sepals, with valve midrib ± prominent. *Seeds* 0·4–0·75 mm long, ecarinate; testa markedly ribbed-scalariform. 2n = 24 (Webb, 1980); n = 12 (Hoar & Haertl, 1932).

Dry, sandy soils in open woods, fields, roadsides, and waste or rocky places; lowland in N. America, to 1600 m in Hispaniola.

Canada (southern Ontario), eastern U.S.A. (Minnesota and Michigan east to Maine, south to Florida and eastern Texas, north to Oklahoma, Missouri, and Iowa); probably or certainly introduced into Hispaniola (Dominican Republic), Paraguay, Brazil (Rio Grande do Sul), and France (Gironde).

CANADA. Ontario: Sandwich, 4 July 1892 (fl), *Macoun* 18317 (BM, K); Windsor, 23 July 1901 (fl), *Macoun* 34082 (GH, K, MO, NY, US).

U.S.A. Alabama:*Covington Co., 12 km S. of Opps, 18 August 1958, *Shinners* 27455 (GA, NCU, SMU); *Lee Co., Auburn, 10 September 1899, *Earle & Earle* 41 (GH, NY, US); *Tuscaloosa Co., 9·6 km E. of University, 28 July 1950, *Shinners* 12655 (GA, SMU). Arkansas: *Drew Co., P.O. Monticello, 21 September 1937, *Demaree* 16339A (GH, MO, NY, SMU); *Perry Co., Ouachita Nat. Forest, Lake Sylvia, P.O. Thornburg, 25 August 1937, *Demaree* 16005 (GA, ILL, MO, NY, SMU); *Stone Co., 8 km SW. of Calico Rock, 14 October 1967, *Tucker* 6837 (NCU). Connecticut: Ellington, 21 August 1875 (fl), *Pease* s.n. (BM); *Windham Co., Woodstock, 1 August 1965, *Seymour* et al. 22973 (MO). Delaware: *New Castle Co., Reybold, 14 October 1939, *Benner* 9164 (GH); *Sussex Co., Reboboth, 16 October 1933, *Larsen* 440 (GH, MO). District of Columbia: Washington, July 1897 (fl), *Holm* s.n. (W); *Mount Hamilton tract, 20 July 1923, *Leonard & Kellip* 1573 (US). Florida: Brevard Co.: Okeechobee region, 8 June 1903 (fl), *Fredholm* 5850 (GH, K, MO); Calhoun Co., 19·5 km S. of Blountstown, Creek Swamp, 19 July 1954 (fl & fr), *Ford & Arnold* 3349 (BM); Gulf Co.: 8 km S. of Wewahitchka on Rt. 71, 7 September 1970 (fl), *Mengher* 370 (BM). Georgia: *Clarke Co., Athens, along Oconee R., behind University campus, 20 September 1946, *Cronquist* 4149 (GA, GH, MO, NY, SMU, US); Sumter Co., no precise locality, August 1897 (fl & fr), *Harper* s.n. (BM); *McIntosh Co., beach on Sapelo Island, 26 July 1956, *Duncan* 20364 (GH, MICH, NCU, SMU, US). Illinois: *Cook Co., West Pullman, 17 September 1900, *Chase* 1485 (GH, MO); *Mason Co., W. of San Jose, 12 July 1951, *Ahles* 2873 (ILL); Union Co., no precise locality, 27 July 1878 (fl), *French* 272 (K). Indiana: *Orange Co., 8 km S. of Chambersburg, N. of Danner's Chapel, 25 September 1937, *Friesner* 11572 (NY, SMU); *Porter Co., Mineral Springs, Little Lake, 25 July 1925, *Lyon* s.n. (MICH). Iowa: Clinton Co., no precise locality, 1 October 1932 (fl), *Naers* s.n. (W). Kentucky: *Harlan Co., Pine Mountain, August 1893, *Kearney* 256 (GH, MO, NY, US); *Warren Co., 6·5 km SW. of Shanty Hollow Lake, 4 August 1970, *Conrad* 1536 (MO). Louisiana: *Rapides Par., N. of Pineville, 29 July 1938, *Correll & Correll* 9895 (GH, NY); *Sabine Co., 7·2 km S. of Many, 9 September 1955, *Shinners* 21620 (GH, SMU); St. Tammany Par., Covington, June & August 1932, *Drummond* s.n. (BM, K). Maine: *Hancock Co., S. ridge of Cadillac Mt., 23 July 1952, *Rossbach* 2436 (NCU); *Lincoln Co., SW. end of Monhegan Island, 12 August 1954, *Rossbach* 3533 (NCU). Maryland: Baltimore Co., W. of Owings Mills near Deer Park Road, Soldiers' Delight Area, 17 August 1970 (fl & fr), *Windler, Keenan & Lombards* 3223 (H, MICH, NCU); Calezu Co., Chesapeake Beach, 27 August 1904 (fl), *House* 366 (K); Massachusetts: Hampshire Co., Hatfield, 31 August 1973 (fl & fr), *Ahles* 78621 (BM, H); ? Co., Bourne, 15 September 1901 (fl & fr), *Kennedy, Williams & Fernald* 63 (BM, BR, G, K, P, W). Michigan: *St. Clair Co., near Port Huron, above Tunnel Station, 15 September 1906, *Dodge* s.n. (MICH). *Mississippi*: Jackson Co., Petie Bois Island, 5 August 1898 (fl), *Tracy* 4966 (BM, MICH, MO, NCU, NY);

*Stone Co., DeSoto Nat. Forest, Beatrice, P.O. McHenry, 24 August 1953, *Demaree* 34057 (GH, SMU). Missouri: Dunklin Co., Campbell, 15 August 1895 (fl), *Bush* 90 (K, MO, NY, US); *Polk Co., Graydon Springs, 31 July 1937, *Steyermark* 23957 (MO); St Louis Co., St. Louis, August 1838 (fl), *Riehl* 3 (BM, BR, G, MO, P). New Hampshire: Hillsboro Co., 1·1 km NE. of Hillsboro-Cheshire Co. line on US Rt. 202, S. of Peterborough, 15 August 1967 (fl & fr), *Ahles* 69047 (BM). New Jersey: Burlington Co., *c.* 9·5 km W. of Chatsworth, 20 August 1948 (fl & fr), *Lawrence & Drew* 531 (BM); Somerset Co., Watchung, 31 July 1934 (fl), *Moldenke* 8148 (BM). New York: Nassau Co., Long Island, Montauk, 12 August 1934 (fl & fr), *Yamamoto* s.n. (TAI); *Tompkins Co., Ithaca, South Hill, 11 August 1921, *Muenscher* 14019 (GH, MO). North Carolina: Alamance Co., 7·2 km E. of Snow Camp, 17 July 1956 (fl & fr), *Bell* 4091 (H); Pitt Co., near US 264, 4·3 km SE. of Grimesland, 10 August 1958 (fl & fr), *Radford* 39573 (BM); *Wake Co., 11 km NW. of Raleigh, 13 July 1938, *Godfrey* 4963 (NCU, NY). Ohio: *Hocking Co., Rock House State Park, 1 September 1935, *Demaree* 11604 (NCU); *Ross Co., near Londonderry, Liberty Township, 8 September 1936, *Bartley & Pontius* 332 (NY). Oklahoma: *Delaware Co., 6·4 km N. of Little Kansas along Okla. 10, 29 July 1957, *Wallis* 5343 (SMU). Pennsylvania: Alleghany Co., Harrison Township, 16 September 1901 (fr), *Shafer* 1470 (GH, W); Delaware Co., Swarthmore, 14 July 1947 (fl), *Palmer* s.n. (W); Northampton Co., Bethlehem, August 1832 (fl), *Moser* s.n. (BM, G, MO, NY, P). Rhode Island: Washington Co., junction fo R.I. Rt. 138 and Int. Rt. 95, Wyoming, 19 August 1974 (fl & fr), *Ahles* 79120 (BM). South Carolina: Beaufort Co., W. end of Lemon Island, just N. of S.C. Rt. 170, slightly above sea level, 12 September 1982 (fr), *Spongberg, Boufford & Bartholomew* 17189 (BM); Chester Co., Chester, October 1958 (fr), *Irvine* 877 (BM); *Lexington Co., 12·8 km SE. of Columbia, 8 August 1939, *Godfrey & Tryon* 1330 (GH, NY, US). Tennessee: Cumberland Co. ?, Cumberland Tableland, July 1888 (fl), *Middleton* (BM); *Grainger Co., Clench Mt., NW. of Bean Station, 28 July 1935, *Underwood & Sharp* 4182 (NCU, NY, TENN); *Polk Co., below Parksville Dam, 20 July 1969, *Rogers* 44091 (SMU, TENN). Texas: *Bastrop Co., Bastrop State Park, August 1938, *Tharp* s.n. (GH, MO, SMU); *Nacogdoches Co., along farm Rt. 1087, 4·8 km E. of Rt. 259, 3 October 1965, *Correll & Correll* 31822 (NA, GH). *Orange Co., between Orange and Sabine R., 14 September 1968, *Correll* 36519 (GH, MICH). Virginia: ? Co; near Jamestown, September 1957 (fl), *Irvine* 93 (K); *Dinwiddie Co., 9·6 km WNW. of McKenny, 29 August 1960, *Kral* 11310 (GH); *Orange Co., Gordonsville, 1 September 1890, *Blanchard* s.n. (MO, NY). West Virginia: *Pocahontas Co., Douthat Creek, near Minnehaha Springs, 6 August 1931, *Core* 3469 (NY). Wisconsin: *Adams Co., Adams Township, 19 August 1958, *Hartley* s.n. (GH).

DOMINICAN REPUBLIC (introduced ?). Azua: Sierra de Ocoa, San José de Ocoa, Sabana de San Juan, *c.* 600 m, 17 March 1929 (fl & fr), *Ekman* H. 11947(S).

BRAZIL (introduced ?). Rio Grande do Sul: *Osorio, 3 January 1950, *Rambo* s.n. (US).

PARAGUAY (introduced ?). La Cordillera: Cordillera de Altos, 7 November 1902 (fr), *Fiebrig* 399 (BM, F, G, GH, K); Cordillera central, Cerros de Tobaty, September 1900 (fl), *Hassler* 6135 (BM, G, GH, K, MICH, P, S, W); near Pirebibuy, by Piraretá waterfall, 18 December 1965 (fr), *Pedersen* 7599 (C).

FRANCE (introduced). Gironde: Cazaux-lac [étang de Cazaux], 30 August 1931 (fl & fr), *Tempère* (see Tempère (1932), Jeanjean (1961), Heine (1962)).

H. gentianoides is clearly related to *H. drummondii* but is relatively reduced in all its parts. In particular it differs from *H drummondii* in being more branched, in the shorter leaves, and in the narrower capsules that much exceed the sepals. The stamens are sometimes reduced to 5, i.e. each fascicle is reduced to a single stamen.

Whereas the distribution centre of *H. drummondii* appears to be Texas, that of *H. gentianoides* is further east, in the Louisiana to Florida area. The occurrences of this species in Brazil and Paraguay are almost certainly the result of long-distance dispersal; the population in the Gironde region of France, however, may be due to introduction by man.

Rodríguez Jiménez (1973) treated *H. cumulicola* as a synonym of *H. gentianoides*, but it is a relative of *H. denticulatum*, not of *H. drummondii*. *H. aphyllum* Lundell, described from Belize, was likewise treated as synonymous with *H. gentianoides* by Rodríguez Jiménez, who thus acted on a suggestion by Adams (1962). Webb (1980) discussed this question and showed that the specimens from Florida that Lundell included in *H. aphyllum* belong to *H. gentianoides*. He, too, nevertheless included it in *H. gentianoides* 'until a series of populations of *H. aphyllum* from Central America can be critically examined and compared to *H. gentianoides*'. In my view, *H. aphyllum* is a species related to and derived from the Central American *H. pratense* Cham. & Schlechtendal (see p. 107).

Sect. 30. **TRIGYNOBRATHYS** (Y. Kimura) N. Robson in *Bull. Br. Mus. nat. Hist.* (Bot.) **16**: 3 (1987).

Ascyrum L., *Sp. Pl.*: 787 (1753); *Gen. Pl.* 5th ed.: 342 (1754), pro min. parte.

Knifa Adans., *Fam. pl.* **2**: 444, 541 (1763).

Hypericum sect. *Perforaria* Choisy, *Prodr. monogr. Hypéric.*: 37, 44 (1821), pro. min. parte.

Receveura Vell. Conc., *Fl. flumin.*: 137 (1829); op. cit., Atlas **5**: tt. 119, 120 (1831).

Tridia Korth. in *Tijdschr. Natuurl. Gesch. Physiol.* **3**: 17 (1836).

Hypericum sect. *Sarothra* sensu Reichardt in Martius, *Fl. bras.* **12** (1): 185 (1878), pro parte excl. typum.

Hypericum sect. Brathys sensu Reichardt in Martius, *Fl. bras.* **12** (1): 185 (1878), pro parte, excl. typum et *H. tenuifolium* A. St.-Hil.

Hypericum sect. *Brathys* subsect. *Spachium* R. Keller in Engl. & Prantl, *Nat. Pflanzenfam.* **3** (6): 214 (1893), pro parte excl. typum.

Hypericum sect. *Brathys* subsect. *Connatum* R. Keller, tom. cit.: 214 (1893).

Hypericum sect. *Brathys* subsect. *Multistamineum* R. Keller, tom. cit.: 214 (1893).

Sanidophyllum Small in *Bull. Torrey bot. Club* **51**: 391 (1924).

Sarothra sect. *Trigynobrathys* Y. Kimura in Nakai & Honda, *Nova fl. jap.* **10**: 233 (1951).

Sarothra sect. *Spachium* series *Knifa* (Adans.) Y. Kimura, tom. cit.: 233 (1951) ['*Kniffa*].

Sarothra sect. *Spachium* series *Japonica* Y. Kimura, tom. cit.: 233 (1951).

Hypericum sect. *Knifa* (Adans.) N. Robson in *Bull. Br. Mus. nat. Hist.* (Bot.) **16**: 2 (1987), pro parte, incl. typum.

Shrubs, subshrubs or perennial to annual herbs up to 2 m tall, the shrubs evergreen (or deciduous?), glabrous or very rarely with simple hairs, without dark glands, with taproot; branching pseudo-dichotomous or dichasial/monochasial or mixed, from up to 10 nodes. *Stems* 4-(rarely 6–) lined and ± compressed (ancipitous)when young and in distal nodes of herbaceous species, sooner or later becoming terete in shrubby species, densely glandular (when young in shrubby species); cortex exfoliating in strips or persistent; bark smooth. *Leaves* opposite or rarely 3-whorled, decussate, sessile, free to completely perfoliate, not forming interfoliar ridge or with base sheathing, deciduous at base or persistent (in herbaceous species); lamina entire, with venation parallel to pinnate or 1-nerved or secondarily with up to 7 basal veins, open? or closed, with tertiary venation laxly to densely reticulate or absent; laminar glands punctiform or rarely united in lines or striae; marginal gland dots dense, very small; ventral resin glands absent. *Inflorescence* 1-flowered with branching pseudo-dichotomous (usually from uppermost node) or 2–∞-flowered with branching dichasial/monochasial from uppermost node, often with subsidiary branches from lower nodes; bracts and bracteoles foliar or reduced. *Flowers* stellate, homostylous. *Sepals* 5(4), free, persistent, erect in fruit, with margin entire; veins 1–11; laminar glands wholly linear to mostly punctiform; marginal, submarginal, and inframarginal glands absent. *Petals* 5(4), persistent, with apiculus terminal or subterminal to obsolete, acute to acuminate or obtuse; margin entire; marginal glands absent; laminar glands wholly linear or distally interrupted to punctiform or absent. *Stamen fascicles* basically 5(4?), with 1–*c.* 80 stamens per fascicle, fascicles free or usually all united to form continuous or interrupted narrow ring of stamens or more rarely united 2 + 2 + 1 or stamens irregularly grouped, persistent; filaments very shortly united or apparently free; anthers yellow, gland amber; pollen type VIII. *Ovary* with (2)3–5(6–8) parietal placentae, ∞-ovulate; styles (2)3–5(6–8), free from bases contiguous; stigmas clavate to broadly capitate. *Capsule* (2)3–5-valved, coriaceous to chartaceous, with valves obscurely narrowly longitudinally vittate, sometimes with 1–3 flattish vesicles. *Seeds* ± narrowly cylindric, not carinate, without apical expansion; testa linear-scalariform to ribbed-scalariform or more rarely linear-reticulate to irregularly reticulate.

Basic chromosome numbers (x). 12, 8(9); ploidy 1 ?,2,4.

Habitat. Open, damp (stream, river, and lake margins, marshes, bogs, damp grasslands, meadows, ditches, rice fields, dripping rocks, wet *Pinus* woods, *Taxodium* swamps, páramo) or dry (heaths, forest clearings, pastures, cultivated fields, roadside, dry or short grasslands, dry rocky places), on sand or clay; 0–2021 m (south of the Amazon), 0–4200 m (Andes (Chile) to Costa Rica), 0–3535 m (Nicaragua to Mexico), 0–2825 m (NW. America), 0–500 m (NE. America, Cuba), 0–3400 m (E. Asia, Australasia), 10–3500 m (Africa and Madagascar).

Distribution. Brazil (south and east), Uruguay, Argentina (north), Chile (central), Paraguay, Bolivia, Peru, Ecuador, Galapagos Is., Colombia, Venezuela, Panama, Costa Rica, Nicaragua, Honduras, El Salvador, Guatemala, Belize, Mexico, Cuba, U.S.A. (western to northern and eastern), Canada (south-western to south-eastern); Japan, Ryukyu Is., Taiwan, Philippines Is., Korea (south), China (south-eastern and south), Bhutan, Sikkim, Nepal, India (Himachal Pradesh, Uttar Pradesh, West Bengal, Meghalaya, Assam, Nagaland, Manipur, Orissa, Madras), Sri Lanka, Burma, Thailand, Laos, Vietnam, Kampuchea, Malaya, Sumatera, Java, Flores, Borneo, Sulawesi, Irian Jaya, Papua New Guinea; Australia (including Tasmania), New Zealand (North, South, and Stewart Islands); New Caledonia, the Hawaiian Islands; Nigeria (Bauchi Plateau), Sudan Republic, Ethiopia, Kenya, Uganda, Tanzania, Zaire (eastern and south-eastern), Burundi, Rwanda, Malawi, Zambia, Angola, Namibia (Caprivi, Waterberg Plateau), Botswana (south-eastern), Zimbabwe, Mozambique (central and south), Swaziland, South Africa (Transvaal, Natal, Cape Province south to Cape of Good Hope), Lesotho, Madagascar (centre and east). Introduced into the Azores, Ireland, Holland, France (Landes), Germany (Bavaria), Italy (Tuscany), Poland (Silesia), the U.S.S.R. (Georgia), and some species into the Dominican Republic, Japan, New Zealand, and the Hawaiian Islands.

Key to sect. 30. *Trigynobrathys*[7]

1 Bracts and usually bracteoles foliar; plant a shrub or subshrub 2
Bracts and bracteoles reduced, lanceolate to subulate, or plant a perennial or annual herb 5

2(1) Pedicels 6–32 mm long; flowers 13–25 (rarely to 30) mm in diam.; plant erect or decumbent but rarely diffusely branched (1. ***rigidum*** pro parte) 3
Pedicels 2–3(–6) mm long; flowers 25–30 mm in diam.; plant decumbent, diffusely branched ..... 2. **microlicioides**

3(2) Leaves narrowly elliptic or ± narrowly oblong, (10–) 20–60 mm long, acuminate to acute, base parallel-sided to narrowly cuneate; inflorescence up to 9-flowered 4
Leaves narrowly to broadly elliptic or narrowly to broadly oblong to lanceolate, 10–20 mm long, acute to rounded, base narrowly cuneate to shallowly cordate; inflorescence up to 22-flowered .... 1c. **rigidum** subsp. **sellowianum**

4(3) Pedicels (9)12–32 mm long; capsule 8–9 mm long; petals 9–17 mm long ..... 1a. **rigidum** subsp. **rigidum**
Pedicels 8–10 mm long; capsule 5–7 mm long; petals 6·5–10 mm long ..... 1b. **rigidum** subsp. **meridionale**

5(1) Leaves coriaceous to subcoriaceous, ovate to broadly elliptic or broadly oblong or, if narrower, then whorled or subulate 6
Leaves chartaceous or thinner or, if coriaceous, then narrower than above but not whorled or subulate 18

6(5) Plant a subshrub; lateral inflorescence-branches, when present, with more than 1 node; leaves coriaceous; styles 3–5 7
Plant a perennial to annual herb; at least uppermost pair of lateral inflorescence-branches 1-noded; leaves subcoriaceous; styles 3(4) 14

7(6) Styles 5(4); leaf pairs ± connate or, if free, then broadly elliptic, spreading 8
Styles 3(4); leaf pairs free and not broadly elliptic, usually ascending to appressed 10

[7]N.B. All species in this section are completely glabrous except 12. *H. setosum.*

8(7) Leaves free or shortly connate; sepals ovate-lanceolate to lanceolate ..... 3. **teretiusculum**
Leaves ⅔ to completely connate; sepals ovate to oblanceolate or spathulate 9

9(8) Leaves chartaceous, oblong to ovate-deltoid (7–10 mm wide), with margin recurved to revolute, thin; sepals 3–4 mm long, subequal ..... 4. **caprifoliatum**
Leaves coriaceous, ovate-deltoid to semicircular (12–40 mm wide), with margin revolute, incrassate; sepals 6–8 mm long, unequal ..... 5. **connatum**

10(7) Leaves isomorphic, broadly ovate to narrowly elliptic or linear-lanceolate; petals 8–12 mm long or, if shorter (6–6·5 mm), then outer sepals foliaceous .. 11
Leaves heteromorphic or all linear; petals 6–8 mm long; outer sepals larger but not foliaceous 13

11(10) Outer sepals coriaceous, broadly ovate to rhombic, 5–7 mm long; pedicels 2–3 mm long (6. **cordatum**) 12
Outer sepals chartaceous, foliaceous, ovate to elliptic-oblong, 7–8 mm long; pedicels absent or almost so ..... 7. **cavernicola**

12(11) Leaves broadly ovate to ovate-oblong (1: b = 1–2), margin incurved; inflorescence branches from 1–2 nodes; flowers (10)15–25 mm in diam. .....
6a. **cordatum** subsp. **cordatum**
Leaves triangular-lanceolate to narrowly elliptic, margin plane or almost so; inflorescence branches from 1–5 or more nodes; flowers 10–13 mm in diam. ..... 6b. **cordatum** subsp. **kleinii**

13(10) Leaves ovate to linear but not acerose, 1–8 mm wide, paired or in whorls of 3; inflorescence 1–11-flowered, branches from 1(2) nodes ..... 8. **ternum**
Leaves acerose, 0·8–1 mm wide, in whorls of 3: inflorescence *c.* 14–20-flowered, branches from up to 14 nodes ..... 9. **legrandii**

14(6) Leaves plane, glabrous; styles 2–4 mm long; stamens 50–80 15
Leaves linear-subulate or scabrous-tomentose to pilose; styles 1·5–2 mm long; stamens 15–40 17

15(14) Stem not thickened at the base; upper leaves ovate or elliptic to obovate or lanceolate; inflorescence from up to 7 nodes; plant terrestrial (10. **denticulatum**) .. 16
Stem thickened (aerenchymatous) at the base; upper leaves lanceolate to linear-lanceolate; inflorescence from up to 17 nodes; plant semi-aquatic or aquatic
11. **harperi**

16(15) Sepals 4–8 mm long; leaves ovate to lanceolate or elliptic (or lower obovate), usually appressed; lower internodes usually exceeding leaves .....
10a. **denticulatum** subsp. **denticulatum**
Sepals 3–3·5 mm long; leaves lanceolate to oblong-elliptic or obovate, ascending or spreading; lower internodes usually shorter than leaves .....
10b. **denticulatum** subsp. **acutifolium**

17(14) Leaves and stem scabrous-tomentose to pilose; leaves ovate to lanceolate or oblong-elliptic ..... 12. **setosum**
Leaves and stem glabrous; leaves linear-subulate ...
13. **cumulicola**

18(5) Uppermost bracteoles lanceolate or narrowly elliptic; leaves with 5–7 basal veins; plant a shrub .....
1d. **rigidum** subsp. **bracteatum**
Uppermost or all bracteoles linear or subulate, or leaves with 1 basal vein, or plant a perennial or annual herb 19

19(18) Styles 5(4–3); plant a shrub or subshrub or woody to wiry perennial or annual; capsule usually ovoid to globose 20
Styles 3(2) or, if 4–5, then plant a herbaceous perennial or annual; capsule usually narrowly cylindric or ellipsoid to ovoid-ellipsoid or ovoid-cylindric 34

20(19) Capsule cylindric or narrowly ovoid-pyramidal, exceeding or equalling sepals (mature fruit of Sp. 15 unknown) 21
Capsule ovoid to globose, equalling or shorter than sepals (sometimes except sp.22) 23

21(20) Inflorescence 1(2–5)-flowered, branching (in Sp. 14) pseudo-dichotomous; leaves 3–13(–18 mm) long, basal or near-basal veins 1–5 22
Inflorescence (at least terminal) *c.* 9–24-flowered, branching dichasial/monochasial; leaves 8–30 mm long, basal or near-basal veins 3–9 ..... 16. **brasiliense**

22(21) Leaves plane, 4–18 mm long, 3–5-nerved; habit erect to decumbent; sepals 3–5·5 mm long, (3)5-nerved
14. **denudatum**
Leaves incurved, 3–4 mm long, 1-nerved; habit prostrate to ascending; sepals 2–2·5 mm long, 3-nerved ..... 15. **pedersenii**

23(20) Sepals unequal, often foliaceous, outer broadly rhombic-elliptic or ovate-lanceolate to broadly ovate, 3·5–5 mm long 24
Sepals equal to subequal or, if markedly unequal, then narrow and/or shorter 25

24(23) Leaves linear to narrowly oblong, 0·5–1·5(–2) mm wide, base not decurrent, basal vein 1; styles 1–1·3 × ovary ..... 17. **polyanthemum**
Leaves narrowly oblong to narrowly lanceolate, 2–5·5 mm wide, base decurrent-amplexicaul, basal veins 3–5; styles 1–3–1·7 × ovary ..... 24. **anceps**

25(23) Leaf-base decurrent; capsule broadly ovoid to globose; styles 5(4) 26
Leaf-base not decurrent or, if so, narrowly ovoid to cylindric; styles 3(4–5) 27

26(25) Flowers (12–)15–25 mm in diam.; inflorescence 1–7(–17)-flowered; styles 2·5–3 mm long; leaves 5–15 mm wide ..... 23. **carinatum**
Flowers 8–10 mm in diam.; inflorescence 15–*c.* 50-flowered; styles 2–2·5 mm long; leaves 2–3(–5·5) mm wide ..... 24. **anceps**

27(25) Capsule (4–)5–6 mm long, ± broadly ovoid; flowers (8–)10–24 mm in diam.; styles mostly 5 (18. **campestre**) 28
Capsule 2–4·5 mm long, subglobose to globose (or rarely ovoid in 21. *lorentzianum*); flowers 2–10(–12) mm in diam.; styles mostly 4–3 30

28(27) Inflorescence 1–5-flowered; flowers 18–24 mm in diam. ..... 18a. **campestre** subsp. **pauciflorum**
Inflorescence 6–*c.* 65-flowered; flowers 8–15(–18) mm 29

29(28) Leaves 3–7 mm wide (1: b = 4–10); plant suffruticose to perennial; styles 5 .....
18b. **campestre** subsp. **campestre**
Leaves 1–3·5 mm wide (l:b = 10–15); plant annual; styles 5–4(3) ..... 18c. **campestre** subsp. **tenue**

30(27) Inflorescence overall ellipsoid to narrowly cylindric; terminal inflorescence usually 3–25-flowered, lateral ones 1–10(–14)-flowered 31
Inflorescence overall obovoid to densely corymbiform; terminal inflorescence (7–)30–*c.* 200-flowered, lateral ones (at least upper) not or scarcely fewer-flowered 32

31(30) Leaves 7–20 mm long, narrowly elliptic to oblanceolate, chartaceous, margin plane to recurved; sepals 3–5 mm long, equal ..... 19. **linoides**
Leaves 3–5 mm long, oblong to hastate, subcoriaceous, margin incurved; sepals 1·5–3 mm long, unequal ..... 20. **salvadorense**

32(30) Flowers 7–10 mm in diam.; sepals 2·5–4 mm long, acute; styles (5)4(3) ..... 21. **lorentzianum**
Flowers 2–4 mm in diam.; sepals 0·7–2 mm long, subacute to rounded; styles 3 (22. **myrianthum**) ... 33

33(32) Leaves spreading, margin plane or subrecurved, base cuneate to parallel-sided; sepals narrowly oblong or narrowly elliptic, veins scarcely prominent ..... 22. **myrianthum** subsp. **myrianthum**
Leaves ascending to erect, margin incurved, base parallel-sided to cordate-aplexicaul; sepals broadly oblong or broadly elliptic to elliptic-ovate, veins prominent ..... 22b. **myrianthum** subsp. **tamariscinum**

34(19) Leaf-bases decurrent-amplexicaul, forming V 35
Leaf-bases not decurrent, if amplexicaul then not forming V 38

35(34) Leaves lanceolate or elliptic to oblong or linear, not glaucous; petals oblong-oblanceolate to oblong ... 36
Leaves (at least upper) triangular-lanceolate to oblong or obovate, glaucous; petals obovate to oblanceolate ..... 27. **gramineum**

36(35) Leaves 1–9 mm wide, lanceolate to elliptic or narrowly oblong or, if linear, then apex acute; stems erect to decumbent, not rooting; capsule 1·3–2 × as long as sepals (25. **silenoides**) 37
Leaves 0·4–1 mm wide, linear, apex rounded; stems decumbent to prostrate, rooting; capsule 1–1·3 × as long as sepals ..... 26. **caespitosum**

37(36) Sepals 3–6 mm long; petals 4–8 mm long; stamens 14–32; styles 1–2 mm long; capsule 4·5–8 mm long .... 25a. **silenoides** subsp. **silenoides**
Sepals 2–3 mm long; petals 2·5–3·5 mm long; stamens 9–10; styles 0·7–0·9 mm long; capsule 3–4 mm long 25b. **silenoides** subsp. **minus**

38(34) Capsule ± broadly ovoid-ellipsoid, 3–4 mm wide, shorter than sepals; inflorescence mixed pseudodichotomous/dichasial/monochasial; lax subshrub to *c.* 1 m tall ..... 28. **relictum**
Capsule narrower and/or exceeding sepals; inflorescence wholly dichasial/monochasial (rarely mixed in spp. 42, 46, and 47), perennial (sometimes woody) or annual herbs to 0·85 m tall 39

39(38) Stigma narrowly to broadly capitate or subpeltate ... 40
Stigma scarcely capitate to clavate (African spp.) ... 61

40(39) Leaf-base cuneate or parallel-sided, separated from adjacent one by interfoliar boss; subshrubs or perennial herbs 41
Leaf-base ± amplexicaul or decurrent, not separated from adjacent one; perennial or annual herbs 43

41(40) Leaves subcoriaceous, flowers 12–16 mm in diam.; styles 2·5–3 mm long; sepals elliptic ..... 29. **killipii**
Leaves chartaceous; flowers 5–10 mm in diam.; styles 0·5–1·6 mm long; sepals lanceolate to oblong or oblanceolate 42

42(41) Stems erect or decumbent, not rooting, usually perennial; leaves elliptic-oblong or lanceolate to linear, 8–27 mm long; capsule ovoid-cylindric to cylindric ..... 30. **thesiifolium**
Stems ascending to prostrate, rooting, usually annual; leaves elliptic to narrowly oblong or oblanceolate, 5–10 mm long; capsule ellipsoid to cylindric ..... 31. **brevistylum**

43(40) Capsule ovoid-conic to ovoid, apex acute to acuminate; styles (1–)2–5 mm long; leaves coriaceous or subcoriaceous 44
Capsule ovoid-ellipsoid or ellipsoid to cylindric or globose, apex obtuse to rounded; styles 0·5–2(–3) mm long; leaves chartaceous to membranous 47

44(43) Leaves oblong or elliptic to linear or oblanceolate (broadest at or above middle), margin often scabrid-denticulate; upper stem internodes about equal 45
Leaves normally lanceolate to linear (broadest below middle), margin entire; upper stem nodes progressively elongate ..... 44. **paucifolium**

45(44) Styles (2–)2·5–4 mm long, longer than ovary; lower leaves usually spreading; flowers (12–)15–20 mm in diam., petals densely red-tinged ..... 32. **pauciflorum**
Styles 1–2 mm long, shorter than ovary; lower leaves usually ascending to appressed; flowers 10–16 mm in diam., petals usually only red-veined (43. **pumillum**) 46

46(45) Leaves with margins and midrib (beneath) scabrid-denticulate or, if smooth, then lamina linear or narrowly elliptic; stems erect to decumbent; styles 1·5–2 mm long; capsule ovoid-conic ..... 43a. **pumillum** subsp. **diffusum**
Leaves with margins and midrib smooth, lamina oblong-elliptic to obovate; stems decumbent to prostrate; styles 1–1·5 mm long; capsule ovoid .... 43b. **pumillum** subsp. **pumillum**

47(43) Leaves linear or lanceolate or narrowly elliptic to linear-subulate; stems erect, sometimes from decumbent base 48
Leaves ovate or oblong to oblong-linear or obovate; stems erect to prostrate 51

48(47) Stems caespitose, branching at or near base; inflorescence-branching usually regularly dichasial for at least two nodes; flowering branches from up to 5 nodes ..... 45. **moranense**
Stems single, branching (at least at first) at about the middle; inflorescence-branching usually monochasial after first node; flowering branches from 1–2 nodes 49

49(48) Leaves plane to recurved, narrowly elliptic or narrowly lanceolate or narrowly oblong to linear; capsule 1·5–4 mm wide 50
Leaves incurved, triangular-subulate to linear-subulate; capsule 1–1·3 mm wide ..... 35. **aphyllum**

50(49) Leaf base parallel-sided; styles 1·5–3 mm long; stamens 12–20 ..... 33. **pratense**
Leaf base cuneate; styles 0·6–0·8 mm long; stamens 5–7 ..... 34. **philonotis**

51(47) Stigmas narrowly to scarcely capitate; stems (at least at base) rooting and ± diffuse; capsule usually shorter than or equalling sepals 52
Stigmas broadly capitate; stems erect or rarely (Sp. 42 p.p.) rooting and diffuse; capsule usually exceeding sepals 53

52(51) Sepals (outer) and leaves (except lower) narrowly oblong or narrowly elliptic-oblong; leaves 1–3-nerved; capsule broadly ellipsoid ..... 46. **parvulum**
Sepals (outer) and leaves broadly oblong or broadly

elliptic to obovate; leaves 3–7-nerved; capsule ellipsoid or cylindric or subglobose ..... 47. **anagalloides**

53(51) Leaves lanceolate or narrowly elliptic to linear or oblanceolate-linear (1: b = *c.* 2·5–9); capsule broadest below middle 54
Leaves ovate (rarely lanceolate) to broadly oblong-elliptic or obovate (1: b = 1–2·5); capsule usually broadest at middle 55

54(53) Leaves lanceolate to narrowly elliptic, usually 6–12 mm wide, (3)5–7-nerved; inflorescence usually compact ..... 36. **majus**
Leaves linear to oblanceolate-linear, 0·5–4(–5·5) mm wide, 1–3(–5)-nerved; inflorescence usually rather lax ..... 37. **canadense**

55(53) Capsule equalling or exceeding sepals; inflorescence-branching never sympodial 56
Capsule shorter than sepals or, if longer, then inflorescence-branching sympodial ..... 42. **japonicum**

56(55) Capsule narrowly conic-ellipsoid; branches narrowly ascending, often confined to inflorescence; middle and upper leaves ovate-deltoid, usually subacute .. 38. **gymnanthum**
Capsule narrowly ovoid or cylindric to ellipsoid-subglobose; branches ± widely spreading, usually from below middle of stem; middle and upper leaves lanceolate-deltoid or ovate-oblong or orbicular, obtuse to rounded 57

57(56) Styles 5; bracts foliar; stems branched from base .... 41. **pleiostylum**
Styles 3; if stem branched from base, then bracts subulate 60

58(57) Stems erect from decumbent and rooting base; inflorescence-branching strictly dichasial/monochasial (39. **mutilum**) 59
Stems decumbent to ascending, rooting above base; inflorescence-branching pseudo-dichotomous at first then (dichasial/)monochasial ..... 40. **arenarioides**

59(58) Stem with apical internode shorter than adjacent one or absent; inflorescence-branching mostly dichasial 60
Stem with apical internode well developed, usually longer than adjacent one; inflorescence-branching repeatedly monochasial distally ..... 39b. **mutilum** subsp. **latisepalum**

60(59) Bracts subulate; leaves paler beneath, rarely broadly ovate to suborbicular ..... 39a. **mutilum** subsp. **mutilum**
Bracts foliar; leaves concolorous, broadly ovate to suborbicular ..... 39c. **mutilum** subsp. **boreale**

61(39) Capsule narrowly ovoid, acuminate, exceeding sepals; bracts and upper leaves acute, linear; flowers in regular dichasial/monochasial cymes; plant erect or decumbent at base only ..... 48. **lalandii**
Capsule ellipsoid to ovoid-cylindric or subglobose, rounded, equalling or shorter than sepals; bracts and upper leaves obtuse to rounded or, if acute, then linear; flowers terminal or pseudo-axillary, usually with shoots in axils of apical node, rarely in irregular cymes; plant decumbent to prostrate 62

62(61) Leaf with base narrowly cuneate to parallel-sided, basal vein 1 or, if 3–5, then with laterals much less prominent; plant usually ± glaucous ..... 49. **globuliferum**
Leaf with base broadly cuneate to cordate-amplexicaul, basal veins 5–9, almost equally prominent; plant not glaucous 63

63(62) Pedicels 5–18 mm long; leaf margin plane; styles 3(4), 1–1·5 mm long; stamens 15–45 64
Pedicels 2–4 mm long; leaf margin undulate; styles (4)5, 0·3–0·5 mm long; stamens 12–15 ..... 52. **oligandrum**

64(63) Leaf base cordate; sepals 5–6 mm long; stamens 36–45; styles 1·5 mm long ..... 50. **humbertii**
Leaf base rounded to broadly cuneate; sepals 3–4 mm long; stamens 15–30; styles 0·7–1·5 mm long ..... 51. **scioanum**

Subsect. 1. **Connatum** (R. Keller) N. Robson, **comb. nov.**

Receveura Vell. Conc. *Fl. flumin*: 137 (1829). Type: *R. cordata* Vell. Conc. (= *H. connatum* Lam.).

Hypericum sect. *Brathys* subsect. *Connatum* R. Keller in Engl. & Prantl, *Nat. Pflanzenfam.* **3**(6): 214 (1893). Type: *H. connatum* Lam.

Hypericum sect. *Brathys* subsect. *Multistamineum* R. Keller, tom. cit.: 214 (1893). Type: *H. pilosum* Walter = *H. setosum* L.

Sanidophyllum Small in *Bull. Torrey bot. Club* **51**: 391 (1924). Type: *S. cumulicola* Small = *H. cumulicola* (Small) P. Adams.

Hypericum sect. *Knifa* (Adans.) N. Robson in *Bull. Br. Mus. nat. Hist.* (Bot.) **16**: 2 (1987), pro parte excl. typum.

Type: *H. connatum* Lam.

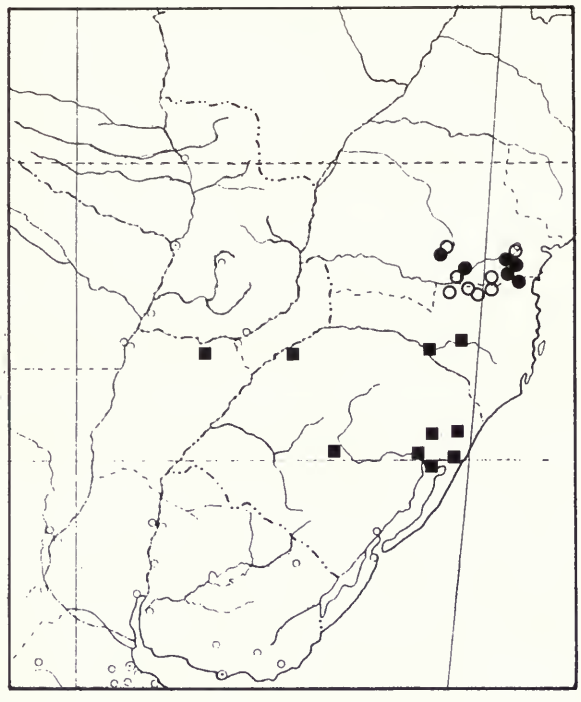
Shrubs, subshrubs or woody annual herbs with leaves free or sometimes ± connate in pairs, styles 5(4–3), and capsules usually broadly ovoid to globose, or herbaceous perennials with styles 3, capsules narrowly ovoid to cylindric, and leaves ± decurrent, forming V.

1. **Hypericum rigidum** A. St. Hil., *Fl. Bras. merid.* **1**: 336 (1828); Walp., *Repert. bot. syst.* **1**: 390 (1842); D. Dietr. *Syn pl.* **4**: 1236 (1847); Reichardt in Martius, *Fl. bras.* **12**(1): 189 (1878), pro parte quoad typum; Lyman B. Smith in *J. Wash. Acad. Sci.* **48**: 314 (1958), pro parte quoad typum; Angely, *Fl. Anal. Paraná*: 451 (1965), *Fl. Anal. S. Paulo* **1**: 186 (1969); Rodríguez Jiménez in Reitz, *Fl. Ill. Catar., Hipericác*: 29, f. 1A (1980), pro parte excl. syn. *H. microlicioides* Lyman B. Smith. Type: Brazil, Paraná, '. . . prope urbem Curityba, in parte australi provinciae Sancti Pauli', March [1820] 1816–1821, *St.-Hilaire* 1631 pro parte (P!-holotype; F!-photograph).

Fig. 12, Maps 10, 11.

Icon: Rodríguez Jiménez in Reitz, *Fl. Ill. Catar., Hipericác.*: 6, t. 1A (1980).

Shrub or subshrub (0·25)0·5–2 m tall, erect or decumbent and branching at the base, with branches ascending-pyramidal or ± diffuse, pseudo-dichotomous or lateral. *Stems* dull red-brown, 4-lined when young, eventually terete, cortex exfoliating in strips; internodes 3–30(–45) mm long, shorter to longer than leaves. *Leaves* sessile, spreading; lamina 8–60 × 2–13 mm, linear-oblong or narrowly to broadly elliptic or ovate-oblong to rarely lanceolate, plane or margin recurved, paler and ± reddish beneath, not glaucous, coriaceous; apex acute or subacuminate to rounded, base parallel-sided to



Map 10 Sect. 30: 1a. *H. rigidum* subsp. *rigidum* ●; 1b. *H. rigidum* subsp. *meridionale* ○; 4. *H. caprifoliatum* ■. Records for 1a and 1b include some from Rodríguez Jiménez (1973).

cordate, free; basal or near-basal veins 7, midrib pinnately branched, tertiary reticulum lax; laminar glands dense, prominent beneath or obscure. *Inflorescence* 1–9(–22)-flowered, dichasial and sometimes pseudo-dichotomous, sometimes with branches from up to 4 nodes below, the whole cylindric to pyramidal; primary pedicels 6–20(–32) mm long; bracts foliar, gradually decreasing in size or rarely suddenly reduced, the ultimate ones very rarely lanceolate-subulate (see below). *Flowers* 13–25(–30) mm in diam., stellate; buds ellipsoid, acute. *Sepals* 5–13 × 0·9–3 mm, equal, not imbricate, narrowly oblong or oblong-linear to narrowly elliptic-oblong or narrowly elliptic, acute; veins 5(7), midrib sometimes prominent; glands proximally linear, punctiform in upper *c.* 0·3. *Petals* yellow to orange (when fading?), 6·5–14(–17) × 3·5–6(–8) mm, 1·2–1·4 × sepals, oblanceolate to oblong-obovate; apiculus acute; glands linear to elongate-punctiform. *Stamens* (30–)40–75, 5-fascicled, longest 3·5–6 mm long, *c.* 0·4–0·6 × petals. *Ovary* 1·5–2·5 × 1–1·6 mm, ovoid; styles 5(4), 1·5–3(–3·5) mm long, 1–1·5 × ovary, spreading; stigmas clavate. *Capsule* 4·5–9 × 3–6 mm, broadly ellipsoid, obtuse to subrounded, shorter than sepals. *Seeds* 0·6–0·8 mm long; testa ribbed-scalariform.

Streamsides, damp meadows, heaths, and bogs; 700–1700 m.

Brazil (Minas Geraes and São Paulo to northern Rio Grande do Sul).

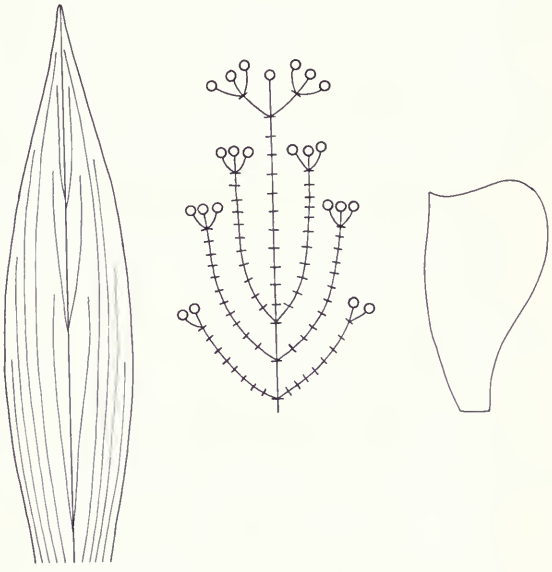
H. rigidum includes the morphologically most primitive forms in sect. *Trigynobrathys*, some plants from Paraná being the nearest to the African *H. revolutum* subsp. *keniense* (sect. 1. *Campylosporus*). Such plants are likewise nearest in their section to *H. terrae-firmae* (from Belize), the most primitive member of sect. 29. *Brathys*.

H. rigidum was misidentified by Reichardt (1878) as a member of the *H. cordatum* (=*cordiforme*) – *H. ternum* group (Spp. 6–9), and his lead was followed by L. B. Smith (1958). The type specimen, however, belongs to the species that Reichardt described as *H. rufescens*.

H. rigidum is very variable, there being reduction trends from the large- and few-flowered, long-leaved, shrubby forms of Paraná to the small- and numerous-flowered, short-leaved, suffruticose forms of Minas Geraes and Santa Catarina/Rio Grande do Sul. The variation along these trends is almost continuous, but it is possible to recognize three main subspecies and one (subsp. *bracteatum*) that forms an important link with other parts of sect. *Trigynobrathys*.

1a. **Hypericum rigidum** subsp. **rigidum**

Map 10.



H. rufescens Klotzsch ex Reichardt in Martius, *Fl. bras.* **12** (1): 194 (1878), pro parte excl. typum.

Shrub, erect, branching pyramidally. *Leaves* 20–60 × 4–13 mm, narrowly elliptic or narrowly oblong to linear-oblong, apex acute to acuminate, base parallel-sided. *Inflorescence* 1–9-flowered. *Flowers* 20–30 mm in diam., pedicels (9)12–32 mm long, bracts foliar. *Petals* 9–17 mm long. *Stamens* (50–)60–75, longest 5–6 mm long. *Styles* 5. *Capsule* 8–9 mm long.

Brazil (Paraná).

BRAZIL. Paraná: Serrinha, 8 February 1912 (fl), *Dusén* 13618 (BM, GH, K, S); mun. Tijucas do Sul, Campina, 14 February 1978 (fl), *Kummrow* 1214 (BM, MBM); mun. S. José dos Pinhaes, Rio Piqueno, 4 March 1980 (fl & fr), *Hatschbach* 42774 (BM, MBM).

1b. **Hypericum rigidum** subsp. **meridionale** (Lyman B. Smith) N. Robson, **stat. nov.**

Map 10.

H. rufescens Klotzsch ex Reichardt in Martius, *Fl. bras.* **12** (1):194 (1878); Angely, *Fl. Anal. Paraná*: 451 (1965), pro parte quoad typum, non Lam. (1795). Type: Brazil, [Paraná?], without precise locality or date (fr), *Sellow* s.n. (B† [F!, GH!, NY!-photographs]-lectotype; G!, K!, NY!, S!, W!). Reichardt cites five numbered specimens, which I have not seen. The photographs of the Berlin unnumbered specimen, however, show that the specimen was named in

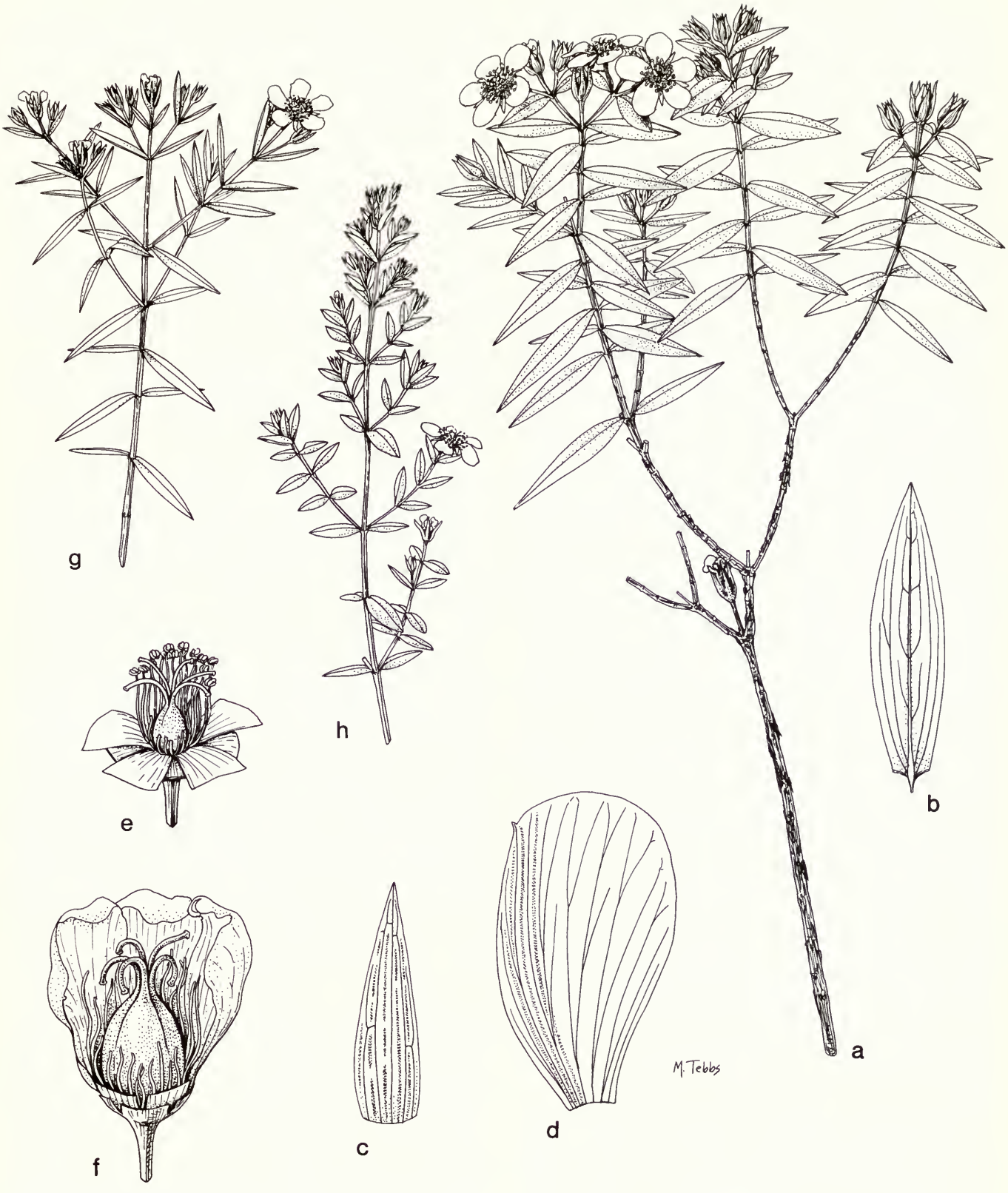
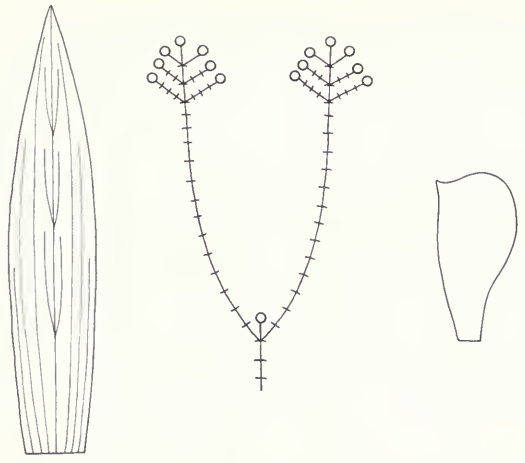


Fig. 12 A. *H. rigidum* subsp. *rigidum*: (a) habit; (b) leaf; (c) sepal; (d) petal; (e) stamens (partly cut away) and ovary; (f) young capsule. B. *H. rigidum* subsp. *meridionale*: (g) habit. C. *H. rigidum* subsp. *sellowianum*: (h) habit (a, g, h × ½; b × 1; c, d × 4; e, f × 2). A. *Kummrow* 1214; B. *Hatschbach* 12027; C. *Smith* 11002.



Klotzsch's writing. In the absence of other authentic material, therefore, it can be chosen as lectotype. The existence of photographs of this specimen, even though it itself is no longer extant, would seem to preclude the necessity of selecting a neotype.

H. meridionale Lyman B. Smith in *J. Wash. Acad. Sci.* **48**: 311 (1958); Angely, *Fl. Anal. Paraná*: 451 (1965). Type as for *H. rufescens* Klotzsch ex Reichardt non Lam.

H. rigidum sensu Rodríguez Jiménez in Reitz, *Fl. Ill. Catar. Hipericác.*: 29(1980), pro parte quoad syn. *H. rufescens* Klotzsch ex Reichardt.

Shrub or subshrub, erect or spreading, branching ± diffusely. *Leaves* 10–30 × 2–8 mm, ± narrowly elliptic or oblong to linear-oblong, apex acute to acuminate, base parallel-sided to narrowly cuneate. *Inflorescence* 1–7-flowered. *Flowers* 14–24 mm in diam., pedicels 8–10 mm long, bracts foliar. *Petals* 6·5–10 mm long. *Stamens* 40–65, longest 5–6 mm long. *Styles* 5. *Capsule* 5–7 mm long.

Brazil (São Paulo, Paraná, Santa Catarina).

BRAZIL. São Paulo: mun. S. Paulo, Tres Barras, Exta Sta. Catarina, 26 February 1940 (fl & fr), *Mattos & Labouriau* R.J.63284 (P, NY). Paraná: Quatro Barras, Rancho Velho, 15 December 1964 (fl), *Hatschbach* 12027 (F, K); mun. Piraquera, entre Rio Taquarí e Rio Divisa, 13 March 1949 (fl), *Hatschbach* 1213 (US). Santa Catarina: mun. Mafra, 2 km S. of Mafra by Estrada da Rodagem Federal, *c.* 800 m, 11 March 1957 (fl), *Smith & Klein* 12077 (F, GH, US).

Subsp. *meridionale* differs from subsp. *rigidum* in the smaller size of leaf and flower and the diffuse habit. The size characters all overlap except, apparently, the capsule length, but in practice it is usually possible to allot a given specimen to a subspecies without difficulty.

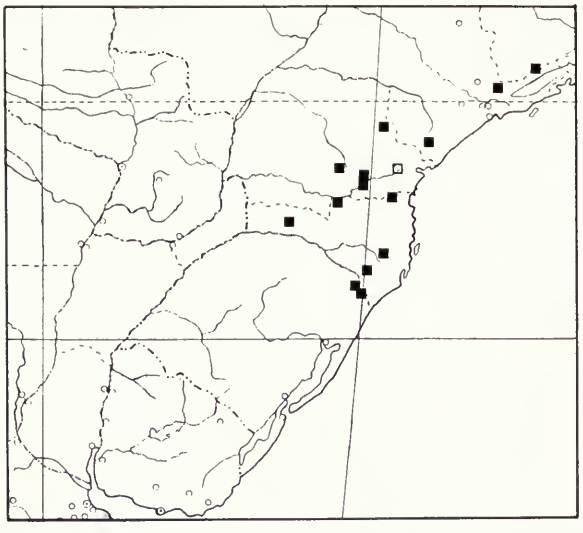
1c. **Hypericum rigidum** subsp. **sellowianum** (R. Keller) N. Robson, **stat. nov.**

Map 11.

H. sellowianum R. Keller in *Bot. Jb.* **58**: 195 (1923); Lyman B. Smith in *J. Wash. Acad. Sci.* **48**: 311 (1958). Type: Brazil, without precise locality or date (fr), *Sellow* 468 (B†-holotype; F!, GH!, NY!-photographs).

H. rigidum sensu Rodríguez Jiménez in Reitz, *Fl. Ill.Catar., Hipericác.*: 29 (1980), pro parte.

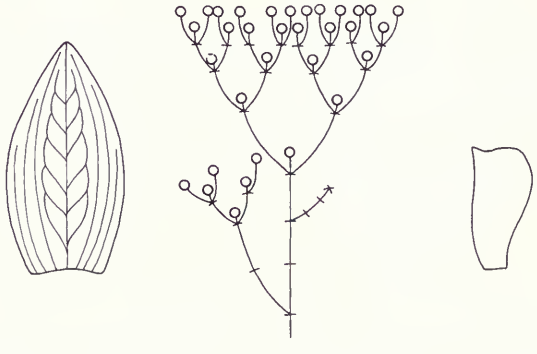
Shrub or subshrub, erect or spreading, branching ± diffusely. *Leaves* 10–20 × 4–6 mm, broadly to narrowly elliptic or broadly to narrowly oblong or lanceolate; apex acute to rounded, base narrowly cuneate to shallowly cordate. *Inflorescence* 1–22-flowered. *Flowers* 13–20 mm in diam., pedicels 6–16(–20) mm long, bracts foliar or rarely ultimately reduced. *Petals* 9–12 mm long. *Stamens* 30–65, longest 3–6 mm long. *Styles* 4–5. *Capsule* 4·5–8 mm long.



Map 11 Sect. 30: 1c. *H. rigidum* subsp. *sellowianum* ■; 1d. *H. rigidum* subsp. *bracteatum* □. Records for 1c include some from Rodríguez Jiménez (1973).

Brazil (Minas Geraes, São Paulo, Paraná, Santa Catarina, Rio Grande do Sul).

BRAZIL. Minas Geraes: Passo Quatro, Faz. Sertão dos Martins, margens do Rio S. Lourenço Velho, 22 April 1948 (fl & fr), *Barbosa & Aranjo* 144 (MO, NY, P). São Paulo: Barreiros, Serra da Bocaina, 24 November 1950 (fl), *Sagadas-Vianna* 3084 (GH, NY, P). Paraná: 10p. W. of S. Mateus do Sul, 9 February 1966 (fl), *Hatschbach [Haas & Lindeman]* 13796 (NY, U, US). Santa Catarina: S. Joachim, Fachinal, 1000 m, 29 January 1950 (fl), *Reitz* 3400 (NY, US); mun. Chapecó, 24 km W. of Campo Eré, Fazenda Campo São Vicente, 900–1000 m, 27 December 1956 (fl), *Smith, Reitz & Sufridini* 9406 (S, US). Rio Grande do Sul: Bom Jesus, Aparados da Serra, 15 February 1947 (fr), *Rambo* 35426 (S, US).



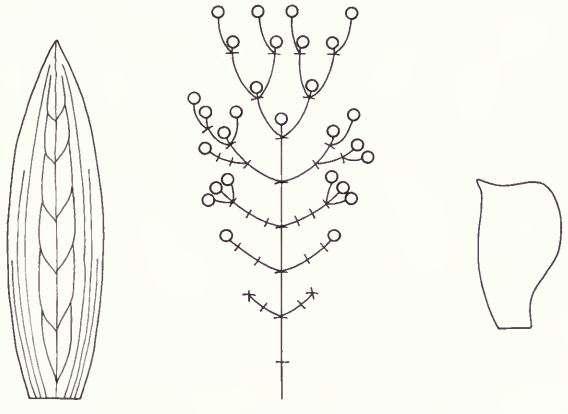
Subsp. *sellowianum* differs from subsp. *meridionale* in its more suffruticose (even herbaceous?) habit, shorter and relatively broader leaves with apex less acute and base never parallel-sided, and the often more numerous flowers in the terminal inflorescence (and the lateral ones). The most

primitive forms are in São Paulo (Serra da Bocaina), whence there are trends north to Minas Geraes (Serra da Mantiqueira) and south to northern Rio Grande do Sul (Aparados do Serra). These trends are morphologically similar, but the extreme southern form has lanceolate, cordate leaves. The subspecies is apparently rarer in Paraná than in the other states, the specimens from there showing a tendency towards 3. *H. teretiusculum*.

Keller described the ovary as 3-styled and the capsule as 3-valved; but the type appears to belong to the primitive, São Paulo form, which has 5 styles. Forms with 4 styles occur only towards the respective extremes of the northward and southward trends.

1d. **Hypericum rigidum** subsp. **bracteatum** N. Robson, **stat. et nom. nov.**

Map 11.



H. rigidum var. *brevifolium* A. St. Hil., *Fl. Bras. merid.* **1**: 336 (1828). Type: Brazil, Paraná, 'prope urbem Curityba', [1820] 1816–1821 (fl), *St.-Hilaire* 1631 pro parte (P!-holotype).

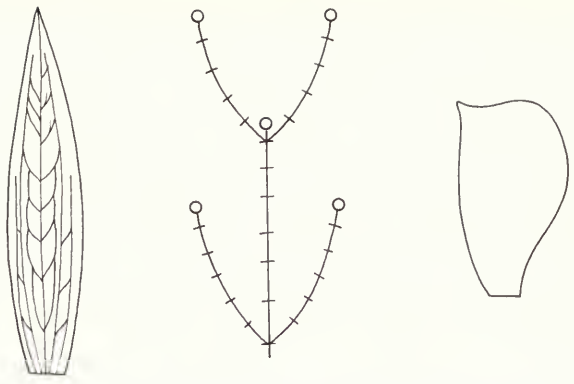
Shrub or ? subshrub, erect, with branches strict. *Leaves* 15–20 × 4–6 mm, narrowly elliptic to narrowly oblong-elliptic; apex acute to subacute, base narrowly cuneate to truncate. *Inflorescence c.* 5–12-flowered, with 1–3-flowered branches from *c.* 3 nodes below. *Flowers c.* 15–18 mm in diam., pedicels 3–6 mm long, bracts reduced foliar, 5–8 mm long, narrowly elliptic. *Petals* 8–10 mm long. *Stamens c.* 50, longest *c.* 4 mm long. *Styles* 5. *Capsule* not seen.

Brazil (Paraná).

BRAZIL. Paraná, near Curitiba, 1816–1821 (fl), *St.-Hilaire* 1631 (P).

Subsp. *bracteatum* differs from the more erect form of subsp. *meridionale* only in having leaves in the flowering region reduced in size and appearing as bracts. The only known specimen, however, forms a link between subsp. *rigidum*, on the one hand, and (respectively) the *brasiliense* group (Spp. 14–27) and subsect. *Knifa* (Spp. 28–52), on the other. Although it shares a collection number (*St.-Hilaire* 1631) with the type of the species, it is quite distinct from it and may even deserve recognition at the species level. At any rate, it is unlikely that it represents merely intra-population variation.

2. **Hypericum microlicioides** Lyman B. Smith in *J. Wash. Acad. Sci.* **48**: 311, f.1, g–i (1958). Type: Brazil, Santa Catarina, mun. de Campo Alegre, Morro Iquererim, 1500



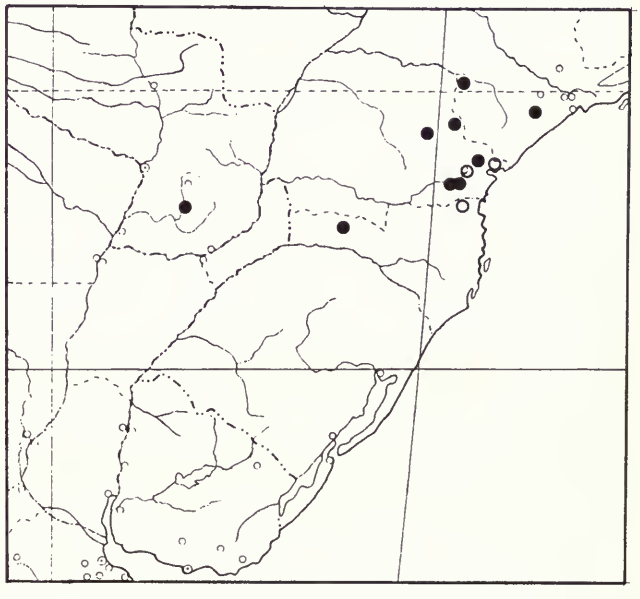
m, 10 December 1956 (fl), *Smith & Klein* 8535 (US!-holotype; P!, NY!-isotypes).

Map 12.

H. rigidum sensu Rodríguez Jiménez in Reitz, *Fl. Ill. Catar., Hipericác.*: 29 (1980), pro parte, quoad syn. *H. microlicioides*.

Icon: Lyman B. Smith in *J. Wash. Acad. Sci.* **48**: 312, f. 1g–i (1958).

Subshrub or woody herb 0·15–0·45 m tall, decumbent and branching at the base, with branches diffuse, lateral or rarely pseudo-dichomotous. *Stems* dull red-brown, 4-lined when young, soon terete, cortex exfoliating in strips; internodes 1·5–10(–30) mm long, shorter to longer than leaves. *Leaves* sessile, appressed or tardily spreading; lamina 8–20 × 3–6 mm, narrowly elliptic or narrowly oblong to lanceolate, plane or usually margin subrevolute, paler (? and reddish) beneath, not glaucous, subcoriaceous; apex acute to obtuse, base cuneate, free; basal or near-basal veins 5–7, midrib pinnately branched, tertiary reticulum lax; laminar glands dense, obscure. *Inflorescence* 1-flowered, terminal and on lateral branches; pedicels 2–3(–6) mm long; bracts foliar. *Flowers* 25–30 mm in diam., stellate; buds ovoid, acute. *Sepals* 8–12 × 2–3 mm, equal, not imbricate, narrowly elliptic to linear, acute to acuminate; veins 7–9, midrib prominent; glands mostly punctiform. *Petals* yellow, 13–16 × 6–8 mm, 1·2–1·4 ×



Map 12 Sect. 30: 2. *H. microlicioides* ○; 3. *H. teretiusculum* ●.

sepals, obovate; apiculus subacute; glands linear, distally absent. *Stamens c.* 70, 5-fascicled, longest 4–5 mm long, *c.* 0·3 × petals. *Ovary* 2·5 × 1 mm, ovoid; styles 5, *c.* 2 mm long, spreading; stigmas clavate. *Capsule* and *seeds* not seen.

Alpine bogs (above tree-line); (950–)1300–1500 m.

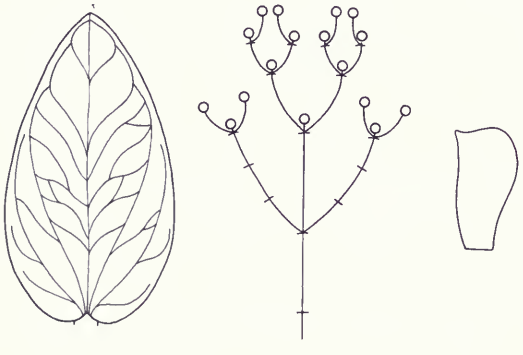
Brazil (Paraná, Santa Catarina).

BRAZIL. Paraná: mun. Curitiba, Atuba, 950 m, November 1960 (fl), *Hatschbach* (7468) (US); mun. Guaratuba, Serra do Araçatuba, 1300 m, 19 November 1971 (fl), *Hatschbach* 28096 (US). Santa Catarina: see type.

H. microlicioides is a higher-altitude derivative of *H. rigidum* subsp. *rigidum*, more suffruticose or even herbaceous and more diffuse in habit, with leaves usually shorter and usually appressed, shorter pedicels, and fewer, larger flowers. It seems possible that the bitopic distribution is the result of parallel evolution of two populations, but it is more likely due merely to division and isolation of one.

3. **Hypericum teretiusculum** A. St. Hil., *Fl. Bras. merid.* **1**: 33 (1828); Walp., *Repert. bot. syst.* **1**: 389 (1842); D. Dietr., *Syn. pl.* **4**: 1236 (1847); Reichardt in Martius, *Fl. bras.* **12** (1): 194 (1878); Lyman B. Smith in *J. Wash. Acad. Sci.* **48**: 313 (1958); Angely, *Fl. Anal. Paraná*: 451 (1965); Rodríguez Jiménez in *C.r. Soc. Biogéogr.* **432**: 91, map 6 (1972), in *Mems Soc. Cienc. nat. La Salle* **33**: 127, f. 15B (1973), in Reitz, *Fl. Ill. Catar., Hipericác.*: 27, f. 4B (1980). Type: Brazil, São Paulo, 'prope flumen Tarerè [Itararé] in parte australi provinciae Sancti Pauli', [1820] 1816–1821 (fl), *St.-Hilaire* 1385 (P!-holotype; US!-photograph).

Map 12.



Sarothra teretiuscula (A. St. Hil.) Y. Kimura in Nakai & Honda, *Nova fl. jap.* **10**: 71 (1951); Angely, *Fl. Anal. S. Paulo* **1**: 187 (1969).

H. subliberum Lyman B. Smith in *J. Wash. Acad. Sci.* **48**: 311, fig. 1a–f (1958). Type: Brazil, Santa Catarina, mun. Curtibanos/Campos Novos, 22 km W. of Curtibanos towards Campos Novos, 850–950 m, 5 December 1956 (fl), *Smith & Klein* 8318 (US!-holotype; HBR, NY!, P!, R-isotypes).

Icones: Lyman B. Smith in *J. Wash. Acad. Sci.* **48**: 312, f.1a–f (1958); Rodríguez Jiménez in Reitz, *Fl. Ill. Catar., Hipericác.*: 18, t. 4B (1980).

Subshrub 0·4–1 m tall, erect, 1-stemmed or branched near base, with branches ascending-pyramidal or spreading, lateral only. *Stems* dull red-brown, 4-lined when young, soon 2-lined to subterete, cortex exfoliating in strips; internodes 9–70 mm long, usually exceeding leaves. *Leaves* sessile, spreading; lamina (10–)14–27 × 5–17 mm, broadly elliptic to broadly ovate, plane or margin recurved, subconcolorous, not glaucous, coriaceous; apex acute to rounded, base broadly cuneate to cordate, free or shortly connate; basal veins 3–5, midrib pinnately branched, tertiary reticulum dense; laminar glands rather dense to sparse, prominent beneath or obscure. *Inflorescence* (3–)10–∞-flowered, dichasial/monochasial from 1–2 nodes, sometimes with lateral branches from nodes immediately below, the whole corymbiform to broadly paniculate; primary pedicels 3–4 mm long; bracts linear-lanceolate, acute. *Flowers* 10–12 mm in diam., stellate; buds ovoid-triangular, acute. *Sepals* 5–7 × 2–2·5 mm, subequal, imbricate, ovate-lanceolate to lanceolate, subacuminate; veins 5–7, midrib prominent; glands linear, sometimes distally punctiform. *Petals* yellow, 7–10 × 3·5–4·5 mm, *c.* 1·4 × sepals, oblong-obovate; apiculus subacute; glands linear to elongate-punctiform. *Stamens c.* 40–70, obscurely 5-fascicled, longest 3–4 mm long, *c.* 0·5 × petals. *Ovary c.* 2 × 1 mm, ovoid-ellipsoid; styles 5, 2–2·5 mm long, *c.* 1–1·2 × ovary, spreading; stigmas subclavate. *Capsule* 4–5 × 3·5–4 mm, ovoid-subglobose, obtuse to shortly rostrate, about equalling sepals. *Seeds* 0·7–0·8 mm long; testa ribbed-scalariform.

Damp meadows and bogs; 840–1000 m.

Brazil (São Paulo?, Paraná, Santa Catarina, Rio Grande do Sul), Paraguay (Guairá)?

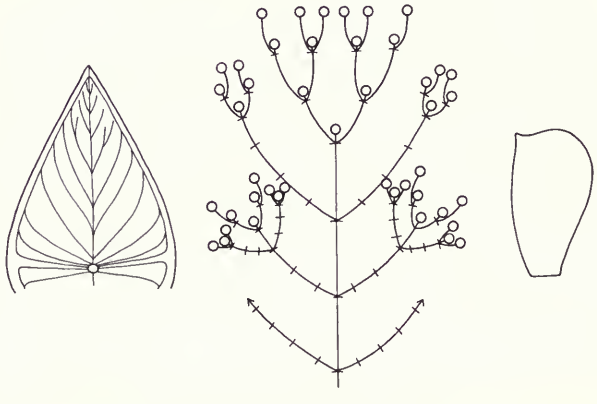
BRAZIL. Paraná: mun. Jaguariaiva, outskirts of Jaguariaiva on Arapoli road, 840 m, 17 January 1965 (fl & fr), *Smith, Klein & Hatschbach* 14639 (US); mun. Piraquara, Nova Tirol, 5 April 1979 (fl & fr), *Hatschbach* 42186 (BM, MEM). Santa Catarina: mun. Chapecó, Fazenda Campo São Vicente, 24 km W. of Campo Eré, 900–1000 m, 27 December 1956 (fl & fr), *Smith, Reitz & Sufridini* 9342–A (A, S). Rio Grande do Sul: ?(see below).

PARAGUAY. Guairá: Cordillera de Villa-Rica, January 1905 (fl & fr), *Hassler* 8758 (K).

H. teretiusculum is related to *H. rigidum* subsp. *sellowianum* through the somewhat anomalous, multiflowered Paraná populations of that subspecies. It differs in being less woody, with larger, broader, cordate leaves and reduced bracts.

The Paraguay record is doubtful, because the Geneva (G) specimen of *Hassler* 8758 is typical *H. connatum*. If the type specimen came from the north bank of the rio Itararé, then *H. teretiusculum* also occurs in São Paulo.

4. **Hypericum caprifoliatum** Cham. & Schlechtendal in *Linnaea* **3**: 125 (1828); Walp., *Repert. bot. syst.* **1**: 389 (1842); D. Dietr., *Syn. pl.* **4**: 1237 (1847); Reichardt in



Martius, *Fl. bras.* **12**(1): 191 (1878); R. Keller in *Bull. Herb. Boissier* II, **8**: 179 (1908); Briquet in *Annu. Conserv. Jard. bot. Genève* **20**: 388 (1919); Malme in *Ark. Bot.* **23** (4): 16 (1930); Lyman B. Smith in *J. Wash. Acad. Sci.* **48**: 311 (1958); Angely, *Fl. Anal. Paraná*: 450 (1965); Rodríguez Jiménez in *C.r. Soc. Biogéogr.* **432**: 91, map 7 (1972), in *Mems Soc. Cienc. nat. La Salle* **33**: 126, ff. 1c, 15a (1973), in Reitz, *Fl. Ill. Catar., Hipericác.*: 21, f. 4A (1980). Type: Brazil, 'in Brasiliae meridionalis provinciis', *Sellow* 1356 (B†-holotype, (F!, GH!-photographs); BR (P!-photograph), G!, S!).

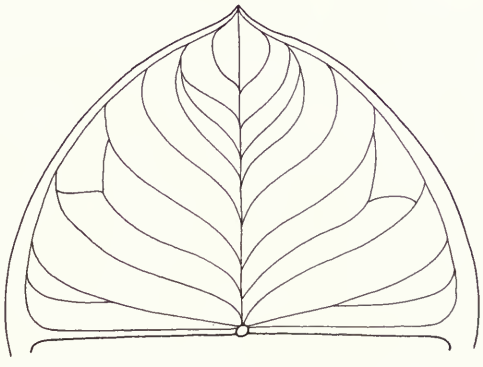
Map 10.

Icon: Rodríguez Jiménez in Reitz, *Fl. Ill. Catar., Hipericác.*: 18, t. 4A (1980).

Subshrub 0·4–1 m tall, erect, 1-stemmed, with branches spreading or ascending, lateral only. *Stems* dull red-brown, 4-lined and ancipitous when young, soon terete, cortex exfoliating irregularly; internodes 7–25 mm long, exceeding or shorter than leaves. *Leaves* perfoliate, spreading; lamina 10–22 × 7–10 mm, ovate-deltoid to oblong, margin recurved to revolute, paler beneath, not glaucous, chartaceous; apex acute to apiculate or obtuse, bases ⅔ to completely connate; basal vein 1, midrib pinnately branched with 4–5 main laterals, tertiary reticulum dense; laminar glands rather sparse, prominent beneath or obscure. *Inflorescence* 3–12-flowered, dichasial/monochasial from 1–2 nodes, sometimes with 1–3 pairs of lateral branches, the whole ± broadly pyramidal; primary pedicels 2–3 mm long; bracts and bracteoles triangular-subulate. *Flowers* 9–15(–20) mm in diam., stellate; buds ovoid, acute to subacute. *Sepals* 3–4 × 1–1·5 mm, subequal, imbricate, narrowly oblong to elliptic or oblanceolate, acute to obtuse; veins 5–9, midrib or all slightly prominent; glands linear, sometimes distally punctiform. *Petals* orange-yellow to orange, 9–11 × 3·5–4 mm, *c.* 3 × sepals, obovate-oblanceolate; apiculus subacute; glands linear. *Stamens* 30–50(–60), irregularly grouped, longest *c.* 3 mm long, *c.* 0·3 × petals. *Ovary* 2 × 1·3–1·5 mm, ellipsoid; styles 5, 3–3·5 mm long, 1·5–1·75 × ovary, spreading; stigmas capitate-clavate. *Capsule* 4–5 × 3·5–4·5 mm, globose, rounded to shortly rostrate, slightly shortly than sepals. *Seeds* 0·5 mm long; testa ribbed-scalariform.

Forest clearings, pastures, roadsides, and disturbed habitats; 0–700 m.

Brazil (Santa Catarina, Rio Grande do Sul), Argentina (Misiones).



BRAZIL. Santa Catarina: mun. Campos Novos, 22 km W. of Campos Novos, *c.* 700 m, 9–10 February 1957 (fr), *Smith & Klein* 11174 (K, NY); mun. Concórdia, Urugai, Vila Rica by Rio do Peixe, 350–400 m, 24 October 1964 (fl), *Smith & Reitz* 12923 (NY, P). Rio Grande do Sul: near Canoas, 1·5 km N. of Porto Alegre, 29 December 1966 (fl), *Lindeman & de Haas* 3898 (K, NY, U); mun. Gravatai, Fonte das Ninfas on road to S. Francisco de Paula, 6 December 1979 (fl & fr), *Pedersen* 12621 (BM).

ARGENTINA. Misiones: Dep. San Javier, Matto Quemado, 26 September 1946 (fl), *Bertoni* 2964 (F, S).

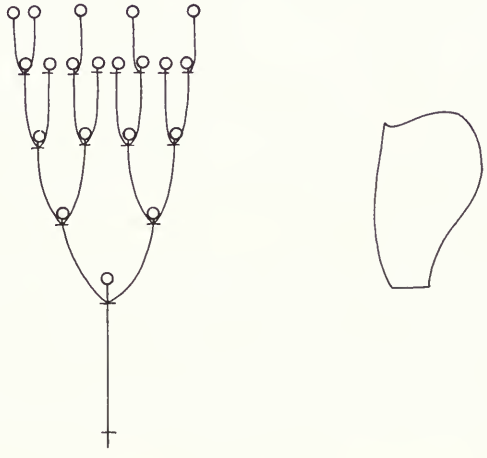
The slenderer stems, strongly connate leaves, and smaller sepals distinguish *H. caprifoliatum* from its closest relative, *H.teretiusculum*, which has a more northern distribution. For differences between *H. caprifoliatum* and *H. connatum* see below (p. 59).

5. **Hypericum connatum** Lam., *Encycl.* **4**: 168 (1797); Choisy, *Prodr. monogr. Hypéric.*: 48 (1821), in DC., *Prodr.* **1**: 548 (1824); A. St. Hil., *Pl. usuel. bras.* **1**: t. 61 (1828), *Fl. Bras. merid.* **1**: 329 (1828); Walp., *Repert. bot. syst.* **1**: 389 (1842); D. Dietr., *Syn. pl.* **4**: 1236 (1847); Reichardt in Martius, *Fl. bras.* **12**(1): 190 (1878); Arechav. in *An. Mus. Hist. nat. Montevideo* **3**: 109 (1890); Chodat & Hassler in *Bull. Herb. Boissier* II, **3**: 1126 (1903); R. Keller in *Bull. Herb. Boissier.* II, **8**: 179 (1908); Briquet in *Annu. Conserv. Jard. bot. Genève* **20**: 389 (1919); Malme in *Ark. Bot.* **23A** (4): 16(1930); Foster in *Contr. Gray Herb. Harv.* **184**: 131 (1958); Lyman B. Smith in *J. Wash. Acad. Sci.* **48**: 311 (1958); Cabrera, *Fl. Prov. Buenos Aires*: 225, fig. 65E–H (1965); Angely, *Fl. Anal. S. Paulo* **1**: 186 (1969); Rodríguez Jiménez in *C.r. Soc. Biogéogr.* **432**: 91, map 7 (1972), in *Mems Soc. Cienc. nat. La Salle* **33**: 128, ff. 1i, 2b,c, 3 h, 15 D (1973), in Reitz, *Fl. Ill. Catar., Hipericác.*: 17, f. 4D (1980). Type: Uruguay, le morne de Monte-Video, May 1767 (fl & fr), *Commerson* s.n. (P!-holotype, F!-photograph; G!).

Map 13.

H. chlorifolium A. St. Hil., *Fl. Bras. merid.* **1**: 329 (1828) ['*chloraefolium*']; D. Dietr. *Syn.pl.* **4**: 1236 (1847); Walp., *Repert. bot. syst.* **1**: 389 (1842); Angely, *Fl. Anal. Paraná*: 450 (1965). Type: Brazil, São Paulo, Campos Geraes, Fazenda da Fortaleza, February [1820] 1816–21 (fl & fr), *St. Hilaire* 1476 bis (P!-holotype).

Brathys connata (Lam.) Spach, *Hist. nat. vég.* **5**: 450 (1836), in *Annls Sci. nat.* (Bot.) II, **5**: 366 (1836).



H. connatum var. *chlorifolium* (A. St. Hil.) Reichardt in Martius, *Fl. bras.* **12** (1): 192 (1878) ['*chloraefolium*']; Briquet in *Annu. Conserv. Jard. bot. Genève* **20**: 390 (1919).

H. connatum var. *obscurum* Briquet in *Annu. Conserv. Jard. bot. Genève* **20**: 389 (1919). Type as for *H. connatum* Lam. Briquet cites *H. connatum* Lam. as a synonym of his variety; therefore the selection of a Sellow specimen as lectotype by Rodríguez Jiménez cannot stand.

H. connatum var. *paraguariense* Briquet in *Annu. Conserv. Jard. bot. Genève* **20**: 390 (1919); Foster in *Contr. Gray Herb. Harv.* **184**: 131 (1958). Type: Bolivia, Tarija, Bermejo, 1400 m, 3 December 1903 (fl & fr), *Fiebrig* 2361 pro parte (G!-lectotype; NY, S!, U!, US!, W!). The selection of this specimen as lectotype by Rodríguez Jiménez (1973: 130) is not appropriate because: (i) Briquet chose the epithet *paraguariense*, and the other syntypes are all from Paraguay; (ii) Briquet described another part of *Fiebrig* 2361 as the type of his var. *fiebrigii*. I therefore propose the following specimen as substitute lectotype: Paraguay, Caaguazú, in campis in regione flumine Yhu, November 1905 (fl), *Hassler* 9686 (G!-lectotype; BM!, K!, P!, W!).

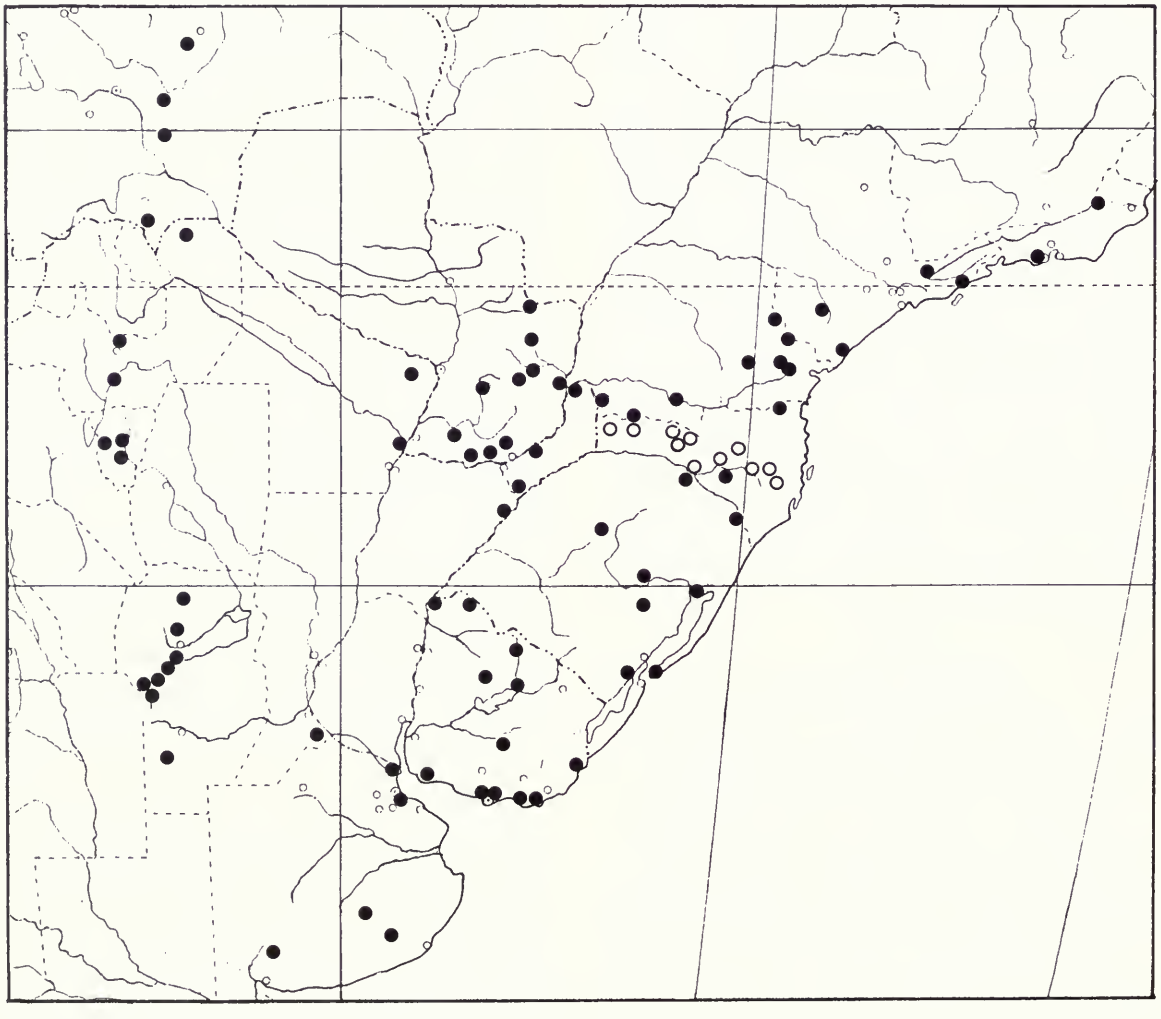
H. connatum var. *fiebrigii* Briquet in *Annu. Conserv. Jard. bot. Genève* **20**: 176 (1919); Foster in *Contr. Gray Herb Harv.* **184**: 131 (1958). Type: Bolivia: Tarija, Bermejo, 1400 m, 3 December 1903 (fl), *Fiebrig* 2361 pro parte (G!-holotype, photograph; NY!, S!, U!, US!, W!). These herbarium symbols indicate where I have seen *Fiebrig* 2361. I have not noted which specimens are referable to var. *paraguariense* and which to var. *fiebrigii*.

H. cyathifolium Larrañaga in *Publ. Inst. Geog. Urug.* **2**: 239 (1923); Lyman B. Smith in *J. Wash. Acad. Sci.* **48**: 314 (1958). Type: Uruguay; probably no specimen ever existed.

Sarothra connata (Lam.) Y. Kimura in Nakai & Honda, *Nova fl. jap.* **10**: 71(1951).

Icones: Reichardt in Martius, *Fl. bras.* **12** (1): t. II (1878): Cabrera, *Fl. Prov. Buenos Aires*: f. 65E–H (1965).

Subshrub or perennial herb with woody base, 0·23–1 m tall, erect, 1-stemmed or branched from base with branches erect, lateral and rarely pseudo-dichotomous. *Stems* dull red-brown, 4(6)-lined and ancipitous when young, soon terete, cortex exfoliating irregularly; internodes 10–50 mm long, usually exceeding leaves. *Leaves* perfoliate, spreading or cyathiform; lamina 10–24(–30) × 12–34(–40) mm, ovate-deltoid to semicircular, margin revolute, incrassate, paler beneath, densely glaucous beneath or on both sides, coriaceous; apex obtuse-apiculate to rounded, bases com-



Map 13 Sect. 30: 5. *H. connatum* ● (confirmed records), ○ (additional records from Rodríguez Jiménez, 1973).

pletely connate or almost so; basal veins 1(3), midrib pinnately branched with 3–4 main laterals, tertiary reticulum dense; laminar glands dense, slightly prominent beneath. *Inflorescence c.* 10–∞-flowered, rarely pseudo-dichotomous after first flower, otherwise dichasial/monochasial from upper node, very rarely with 1–2 lateral branches from the nodes below, the whole corymbiform; primary pedicels 1·5–5 mm long; bracts and bracteoles linear-lanceolate to subulate. *Flowers* 10–24 mm in diam., stellate; buds ovoid, acute. *Sepals* 6–8 × 2·5–3·5 mm, unequal, imbricate, ovate or rhombic to elliptic or spathulate, acuminate to acute; veins 5–7, midrib or all slightly prominent; glands linear, punctiform in distal ⅔. *Petals* yellow to orange, 5–13 × 3–4 mm, 1·5–3 × sepals, oblong-oblanceolate to obovate; apiculus obsolete; glands linear, distally interrupted. *Stamens* 50–60 (–*c.* 100), obscurely 5-fascicled, shortly monadelphous, longest 3–5 mm long, 0·3–0·4 × petals. *Ovary* 2–2·5 × 1·5–2 mm, ovoid; styles 5(4), 2·5–3 mm long, *c.* 1·2 × ovary, spreading; stigma clavate to subcapitate. *Capsule* 5–6 × 4–5 mm, subglobose, shortly rostrate, almost equalling sepals. *Seeds* 0·7–1 mm long; testa ribbed-scalariform.

Pastures and dry, rocky places; 20–2021 m (Bolivia).

Brazil (São Paulo to Rio Grande do Sul), Uruguay, Argentina (Salta and Chaco south to San Luis and Buenos Aires), Paraguay, Bolivia (Chuquisaca, Tarija).

BRAZIL. São Paulo: Itapetinga, 24 January 1950 (fl), *de Lima* RJ 69463 (MO, P). Paraná: mun. S. José dos Pinhaes, Col. Murici, 30 November 1978 (fl & fr), *Hatschbach* 41803 (BM, MBM); mun. Jaguariaiva, 730 m, 7 June 1914 (fl & fr), *Dusén* 15122 (GH, S). Santa Catarina: mun. Lajes, Indios, ± 950 m, 16 December 1967 (fl), *Lourteig* 2255 (P); mun. Campo Eré, Chapecó, Capetinga, 24 January 1952 (fl), *Reitz* 4620 (NY); mun. Bom Jardin, Fachinal, 1200 m, 29 January 1950 (fl), *Reitz* 3409 (NY). Rio Grande do Sul: S. of Vacária, over 200 km N. of Porto Alegre, 28 December 1966 (fl), *Lindeman & de Haas* 3953 (K, NY, U); Capão do Leão, prope Pelotas, 3 November 1901 (fl), *Malme* It. Reg. II 185 (S); Cacapara do Sul, Morro Peraí, 21 February 1948 (fl & fr), *Palacios-Cuezzo* 1451 (MO).

URUGUAY. Artigas: vicinity of Artigas, 5 December 1943 (fl), *Bartlett* 21063 (GH, MICH). Canelones: Puerto Jackson, 20 m, 3 February 1931 (fr), *Herter* 86619 (Z). Colonia: Salto S. Luis, 120 m, 24 May 1947 (fr & fr), *Herter* 99655 (F, MO, S, Z). Maldonado: Cerro Pan de Azucar, 100 m, 11 November 1970 (fl), *Lourteig* 2480 (P). Rivera: Cuñapiru, 180–210 m, 1928 (fl), *Wright* s.n. (BM). Rocha: 25 km N. Castillos, Palmares de Castillos, 22 January 1944 (fr), *Bartlett* 21371 (GH, MICH).

ARGENTINA. Salta: Olemaina, 1500 m, 5 December 1929 (fl), *Venturi* 9851 (GH, K). Chaco: Dep. Bermejo, Puerto Bermejo, 2 March 1901 (fl), *Kermes* 6353 (P). Tucumán: Famaillá, San Javier, Villar Nongues, 1200 m, 18 November 1946, *Sparre* 705 (S). Córdoba: Dep. Santa Maria, Alta Gracia, Puesto 'El Cura', 1800 m, 27 January 1944 (fr), *Pierotti* (BM, GH, U). San Luis: Sierra de Los Comechingones, 'El Rincon', 4 km E. of Merlo, 1000–2000 m, 29 January 1974 (fl), *Conrad* 2502 (MO). Buenos Aires: near Balcarce, Sierra Bachicha, post El Cruce, W. slope, *c.* 200 m, 2 April 1966 (fr), *Hawkes, Hjerting & Rahn* 4036 (BM). Entre Rios: Dep. Concordia, Salto Grande, 12 November 1968 (fl), *Cabrera & Sagastegui* 19296 (C, P). Corrientes: San Roque, Estancia 'Caaguazu', 1 March 1961 (fl & fr), *Pedersen* 5854 (C, GH). Misiones: Dep. San Ignacio, San Ignacio (Campo Rosa), 220 m, 16 November 1944 (fl & fr), *Montes* 465 (BM, F, GH, NY, S).

PARAGUAY. Guairá: Cordillera de Villa-Rica [Villarrica], January 1905 (fr), *Hassler* 8758 (BM, G, GH, P, W), Caaguazú: Caaguazú, 10 December 1874 (fl & fr), *Balansa* 2264 (P). Itapuá: Itapuá, ruderalis Ecclesiae imperfectae pagi Jesus, 12 November 1978 (fl & fr), *Bernardi* 18542 (G). Misiones: Santiago, Estancia 'La Soledad', 16 November 1956 (fl & fr), *Pedersen* 4317 (C, G, GH). Paraguarí: Paraguarí, Tibicuary Mi, Isla Alta, 17 November 1978 (fr), *Bernardi* 18762 (BM, G). Alto Paraná: Hernandarias, 20 km N. de Hernandarias, 10 January 1974 (fl), *Schinini* 8036 (G).

BOLIVIA. Chuquisaca: Rosal, 2021 m, 3 October 1949 (fl), *Brooke* 5755 (BM). Tarija: Bermejo, 3 December 1903 (fl & fr), *Fiebrig* 2361 (NY, S, U, US, W).

H. connatum resembles *H. caprifoliatum* in having the leaf pairs connate, but its leaves are coriaceous, not chartaceous, with a markedly incrassate margin (see Briquet (1919)) and nerves prominent beneath. The leaves are also relatively shorter and broader than in *H. caprifoliatum*, and the habit is less branched, often indeed with stems simple from the base.

The plants nearest in form to *H. caprifoliatum*, with smaller flowers and leaves and branched stems, are from northern Argentina and Paraguay, whence there is a gradual trend towards basal branching with simple (annual?) stems, larger leaves, and larger flowers. The extreme in leaf size is apparently represented by the population from São Paulo that St.-Hilaire named *H. chlorifolium*; but the larger-leaved, larger-flowered form occurs throughout the range of the species and, in north-eastern Argentina and Paraguay, co-exists with the smaller-flowered form. It was no doubt this overlapping variation that prompted Briquet to describe his varieties; but there is no apparent gap in variation such as would allow the recognition of infraspecific taxa.

6. **Hypericum cordatum** (Vell. Conc.) N. Robson, **comb. nov.**

Receveura cordata Vell. Conc., *Fl. flumin.*: 237 (1825), **5**: t.119 (1835). Type: Brazil, *Vandelli* (LISC?-holotype).

H. cordiforme A. St. Hil., *Fl. Bras. merid.* **1**: 330 (1828); Walp., *Repert. bot. syst.* **1**: 389 (1842); D.Dietr., *Syn. pl.* **4**: 1236 (1847); Reichardt in Martius, *Fl. bras.* **12** (1): 190, t.33 f.2 (1878); R. Keller in *Bull. Herb. Boissier* **6**: 259 (1898), op. cit. II, **8** 179 (1908); Briquet in *Annu. Conserv. Jard. bot. Genève* **20**: 390 (1919); Lyman B. Smith in *J. Wash. Acad. Sci.* **48**: 314 (1958); Angely, *Fl. Anal. Paraná*: 450 (1965), *Fl. Anal. S. Paulo* **1**: 186 (1969); Rodríguez Jiménez in Reitz, *Fl. Ill. Catar., Hipericác*: 13, f. 3A (1980), pro parte, excl. syn. var. β A. St. Hil. et var. *Glazioui.* Type: Brazil, São Paulo, in pascuis prope urbem Sancti Pauli, [1819] 1816–1821 (fl), *St.-Hilaire* 1172 (P!-holotype & isotype).

H. cordiforme var. *genuinum* Briquet in *Annu. Conserv. Jard. bot. Genève* **20**: 391 (1919). Type: Brazil, São Paulo, prope São Paulo, February 1839 (fl & fr), *Guillemin* 315 (G!-holotype; P!).

Subshrub (? or perennial herb with woody base), 0·2–0·6(–1) m tall, erect or decumbent, branched from the base and sometimes above, with branches erect, pseudo-dichotomous and/or lateral. *Stems* dull red-brown, persistently 4-lined, ancipitous when young, cortex exfoliating in strips; internodes 5–15(–20) mm long, exceeding or rarely equalling leaves. *Leaves* sessile, isomorphic, erect to appressed; lamina 9–18 × 4–11 mm, broadly ovate to oblong-ovate or elliptic,

not or only slightly narrower towards base of stem, margin recurved and ± incrassate or rarely plane (when narrow), concolorous or rarely paler beneath, densely glaucous, coriaceous; apex acute or apiculate to obtuse, base cordate or rarely subcordate, free or up to ⅓ connate; basal or near-basal veins 1–7, midrib obscurely branched, tertiary reticulum not visible; laminar glands dense, slightly prominent beneath. *Inflorescence* (3–)7–21(–35)-flowered, dichasial, sometimes branching pseudo-dichotomously below the inflorescence or rarely branching mixed dichasial/pseudo-dichotomous, rarely with 1–2 branches from the node below and very rarely from farther down stem, the whole corymbiform; primary pedicels 2–3 mm long; bracts and bracteoles lanceolate. *Flowers* (10–)15–25 mm in diam., stellate; buds ovoid, subacute. *Sepals* 5–7 × 2–3·3 mm, unequal, imbricate, ovate or ovate-lanceolate to rhombic or rarely lanceolate, acute; veins *c.* 7, 3 central prominent; glands linear, punctiform in distal ¼ or less. *Petals* yellow to orange, 8–12 × 4–7 mm, 1·6–2 × sepals, obovate-oblong to obovate; apiculus acute; glands linear. *Stamens* 35–60, obscurely 3(4)-fascicled, longest 4–5 mm long, *c.* 0·5 × petals. *Ovary* 1·5–2 × 1–1·5 mm, ovoid-subglobose; styles 3(4), 3–4 mm long, 1·8–2 × ovary, spreading; stigmas subcapitate. *Capsule* 4–6(–7) × 3–5 mm, ovoid-subglobose, scarcely rostrate, almost equalling sepals. *Seeds* 0·8–0·9 mm long; testa ribbed-scalariform.

Thickets and dry pastures; 800–1200 m.

Brazil (Minas Geraes and São Paulo to Rio Grande do Sul).

H. cordatum has coriaceous leaves like those of *H. connatum* but smaller, and they also differ in being free or only slightly connate at the base. The flowers are also usually smaller and have 3(4) styles not 5(4). *H. cordatum* has hitherto been known as *H. cordiforme* A. St. Hil., but Vellozo's illustration of *Receveura cordata* is clearly of the same plant. His epithet therefore has priority.

H. cordatum is fairly uniform, with broadly ovate, cordate leaves throughout its range; the plants with the largest leaves and flowers occur in São Paulo. In Santa Catarina, however, there is a trend towards narrower leaves (oblong-ovate to elliptic-oblong), more numerous lateral inflorescence branches (–5), and smaller flowers (10–15 mm in diam.). Such plants (e.g. *Smith & Klein* 8220) at first sight look more like *H. ternum*, but they have the longer internodes and (usually) 1-noded inflorescence of *H. cordatum*. These plants, in turn, merge with even smaller-leaved, smaller-flowered individuals (e.g. *Reitz & Klein* 5223), in which the leaves are as small as those of *H. ternum* but broader, and they also resemble *H. ternum* in having numerous lateral branches. The leaves, however, are never narrow or overlapping. Despite some intermediates in Santa Catarina and Paraná, it seems most appropriate to place these anomalous plants in a distinct subspecies.

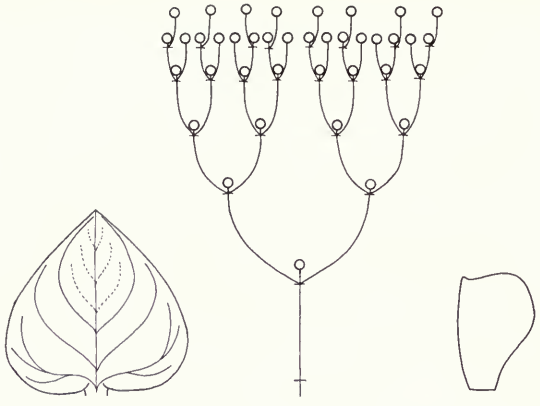
6a. **Hypericum cordatum** subsp. **cordatum.**

Fig. 13A, Map 14.

Leaves broadly ovate or triangular-ovate to ovate-oblong (1:b=1–2:1), margin slightly incurved-incrassate. *Inflorescence* from 1(2) nodes, very rarely with lateral branches from further down stem. *Flowers* (10)15–25 mm in diam. *Sepals* ± broadly ovate.

Distribution of species but rather rare in Santa Catarina.

BRAZIL. Minas Geraes: Serra do Picú, 11 December 1886 (fl), *Schrenck* 1560 (C). São Paulo: prope Mugy [Moji], November 1833 (fl), *Riedl* 1610 (K, P, W); Butantan, 27 August 1917 (fl), *Hoehne* 2 (F, NY); Itapetininga, 1 March 1951 (fl), *de Lima* in RJ 78066 (P). Paraná: Lagoa Dourada, 13 January 1964 (fl & fr), *Pereira* 8258 (= *Pabst* 7533) (NY, P); Ponta Grossa, Passo do Pupa, 10 October 1967 (fl), *Hatschbach* 17386 (MO). Santa Catarina: mun. Lajes, Indios, *c.* 950 m, 16 December 1967 (fl), *Lourteig* 2241 (P). Rio Grande do Sul: prope S. Francisco de Paula, Taimbé, 18 December 1950 (fl & fr), *Rambo* 49408 (S).



6b. **Hypericum cordatum** subsp. **kleinii** N. Robson, **subsp. nov.**

Fig. 13B, Map 14.

H. denudatum sensu Rodríguez Jiménez in Reitz, *Fl. Ill. Catar., Hipericác.*: 16 (1980), pro parte, excl. t. 3B, non St.-Hil. (1828).

A subsp. *cordatum* foliis sepalisque angustioribus, floribus minoribus, ramis lateralibus, inflorescentiae interdum e nodis 2–5 ortis, differt. Type: Brazil, Santa Catarina, mun. Lajes, between Palmeiras and Lajes, 800–900 m, 2 December 1956 (fl), *Smith & Klein* 8100 (US!-holotype; NY!-isotype).

Leaves triangular-lanceolate or narrowly oblong to narrowly elliptic (1:b = 3–4:1), margin plane or almost so. *Inflorescence* from 1–5 nodes, sometimes with lateral branches from lower nodes. *Flowers* 10–13 mm in diam. *Sepals* narrowly ovate to lanceolate.

Brazil (Santa Catarina, Paraná).

BRAZIL. Paraná: mun. Palmas, 10 km NW. de Palmas, 4

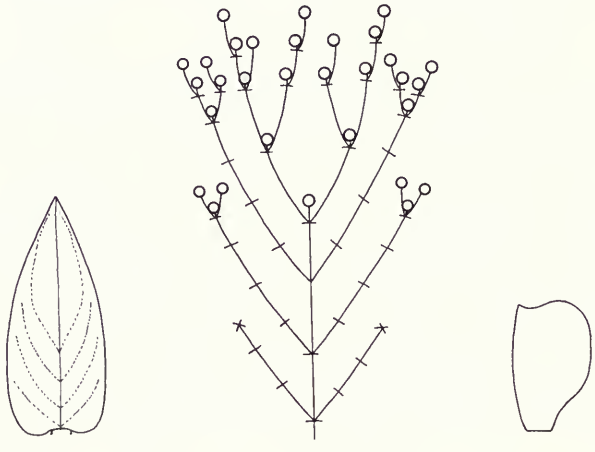
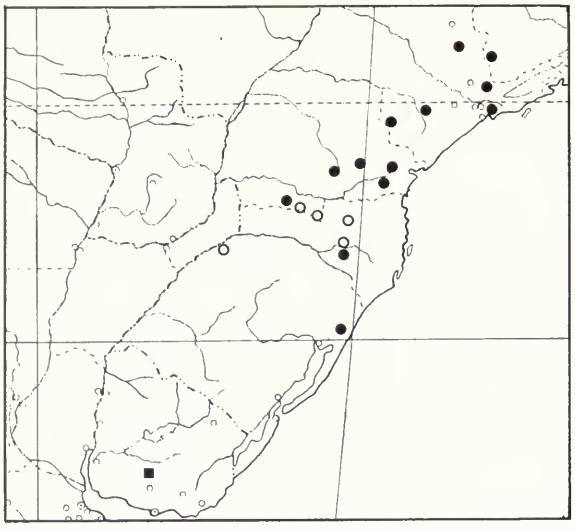


Fig. 13 A. *H. cordatum* subsp. *cordatum*: (a) habit; (b) leaf; (c) sepal; (d) petal; (e) stamens (partly cut away) and ovary; (f) capsule. B. *H. cordatum* subsp. *kleinii*: (g) habit; (h) leaf. C. *H. cavernicola*: (i) habit (a, g, i × ½; b, h × 1; c–f × 4). A. *Glaziou* 10396; B. *Hatschbach* et al. 28161; C. *Berro* 4862.

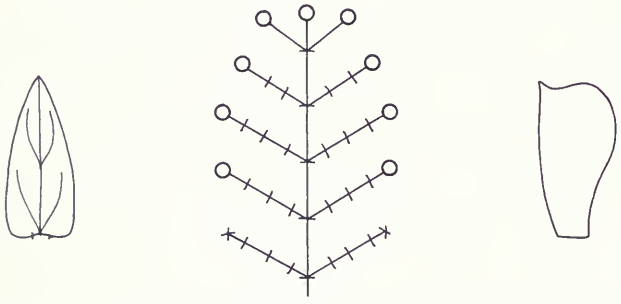


Map 14 Sect. 30: 6a. *H. cordatum* subsp. *cordatum* ●; 6b. *H. cordatum* subsp. *kleinii* ○; 7. *H. cavernicola* ■.

December 1971 (fl), *Hatschbach [Smith & Klein]* 28161 (BM, MBM). Santa Catarina: mun. Lajes, 15 km N. of Lajes, 900 m, 4 December 1956 (fl), *Smith & Klein* 8220 (US); Agua Dolce, 3 km NW. of Herciopolis, Campos de Palmas, 1100–1200 m, 5 December 1964 (fl), *Smith & Klein* 13628 (US); mun. Campo Alegre, Morro Iquererim, 1300–1500 m, 8 November 1956 (fl), *Smith & Klein* 7407 (US).

7. **Hypericum cavernicola** Lyman B. Smith in *Wrightia* **2**: 90 f. 19a–c (1960). Type: Uruguay, Tacuarembo, Gruta de los Cuevos, 17 December 1907 (fl), *Berro* 4862 (US!-holotype; K!, MVFA).

Fig. 13C, Map 14.



Subshrub, *c.* 0·2 m long, erect or ascending, branched from the base and above, with branches erect, lateral. *Stems* dull red-brown, 4-lined, and ancipitous when young, soon 2-lined, cortex exfoliating in strips; internodes 2–5 mm long, shorter than leaves. *Leaves* sessile, suberect to spreading; lamina 4–10 × 2–4 mm, ovate-triangular to oblong or (on lateral branches) lanceolate to linear-lanceolate, margin subrecurved, concolorous, coriaceous; apex acute to subacute, base cordate to truncate, free; basal veins 1(3), midrib not or obscurely branched, tertiary reticulum not visible; laminar glands dense, slightly prominent beneath. *Inflorescence* 1(–11)-flowered, dichasial/monochasial from 1–3 nodes, with lateral branches from nodes almost immediately below, the whole subcylindric; pedicels almost absent; bracts foliar or transitional; bracteoles appressed to calyx. *Flowers c.* 10 mm in diam., stellate; buds ovoid, subacute. *Sepals* 7–8 × 2 or 3·5–4 mm, very unequal, imbricate, 2 outer ovate to elliptic-oblong, distally recurved, 3 inner narrowly oblong-lanceolate, all acute to subacuminate; veins 9–11, 5 central or all prominent; glands linear, punctiform in distal *c.* ½. *Petals* yellow, 6–6·5 × 3·5–4 mm, shorter than sepals, narrowly obovate; apiculus acute; glands mostly punctiform. *Stamens* 25–30, obscurely 5-fasciculate, longest *c.* 4 mm long, *c.* 0·6 × petals. *Ovary* 2 × 1·5 mm, ovoid-subglobose; styles 3, 2·5 mm long, 1·2 × ovary, spreading; stigmas subcapitate. *Capsule* and *seeds* not seen.

Stony ground; lowland.

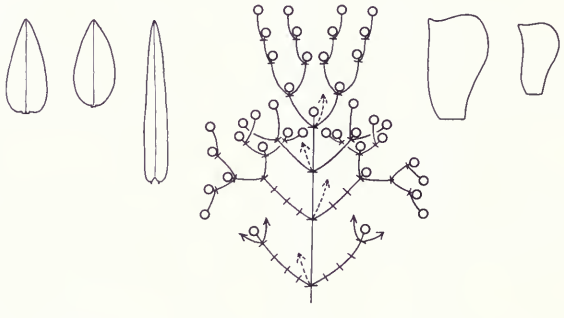
Uruguay (Tacuarembo).

URUGUAY. Tacuarembo: Gruta de los Cuevos, 17 December 1907 (fl), *Berro* 4862 (K, US).

H. cavernicola is known to me only from the type. It is clearly closely related to and derived from *H. cordatum* subsp. *kleinii*, but the sessile flowers with unequal sepals, the outer pair much larger, are diagnostic. The large outer pair of sepals are reminiscent of those of the '*Ascyrum*' species of sect. *Myriandra*.

8. **Hypericum ternum** A. St. Hil., *Fl. Bras. merid.* **1**: 330 (1828); Walp., *Repert. bot. syst.* **1**: 389 (1842); D. Dietr., *Syn pl.* **4**: 1236 (1847); Reichardt in Martius, *Fl. bras.* **12** (1): 194 (1878); Lyman B. Smith in *J. Wash. Acad. Sci.* **48**: 312 (1958); Angely, *Fl. Anal. Paraná*: 451 (1965); *Fl. Anal. S. Paulo* **1**: 186 (1969). Type: Brazil, Paraná, Distr. Curitiba, 'prope pagulum vulgo Fregesia nova', March [1820] 1815–1821, *St.-Hilaire* 1585 (P!-holotype; US!-photograph).

Map 15.



H. cordiforme [var.] β sensu A. St. Hil., *Fl. Bras. merid.*: 330 (1828); Reichardt in Martius, *Fl. bras.* **12** (1): 190 (1878). Type: Brazil, Minas Geraes, in pascis montis vulgo Papagayo, [1822] 1815–1821 (fl), *St.-Hilaire* D.541 (P!-holotype).

H. rigidum sensu Reichardt in Martius, *Fl. bras.* **12**(1): 189 (1878), pro parte, excl. typum et syn. *H. sellowianum* Klotzsch; Lyman B. Smith in *J. Wash. Acad. Sci.* **48**: 314 (1958).

H. cordiforme var. *hilairei* Briquet in *Annu. Conserv. Jard. bot. Genève* **20**: 391 (1919). Type as for *H. cordiforme* var. β sensu A. St. Hil.

H. cordiforme var. *glazioui* Briquet in *Annu. Conserv. Jard. bot. Genève* **20**: 391 (1919). Type: Brazil, Minas Geraes, Serra do Caponema, Caraca, 1883–1884 (fl), *Glaziou* 14534 (G!-holotype; C!, K!, P!-isotypes).

H. denudatum sensu Rodríguez Jiménez in Reitz, *Fl. Ill. Catar., Hipericác.*: 16 (1980), pro parte, quoad t.3B.

Icon: Rodríguez Jiménez in Reitz, *Fl. Ill. Catar., Hipericác.*: 14,t.3B (1980).

Subshrub, 0·2–0·7 m tall, erect, usually unbranched from the base, ± richly branched above, with branches strict, lateral, rarely in whorls of 3. *Stems* green to red-brown, persistently 4-lined, ancipitous when young, cortex exfoliating in strips; internodes 5–18 mm long, the upper exceeding leaves. *Leaves* sessile, ± heteromorphic, erect to appressed, eventually sometimes spreading, paired or very rarely 3-whorled on main stem; lamina 5–14 × 1–6(–8) mm, ovate or ovate-triangular to lanceolate or linear, margin recurved or rarely to plane, subconcolorous, coriaceous; apex acute to subacute, base cordate to parallel-sided or subcuneate, free; basal veins 1(3), midrib branched with 1–2 laterals or unbranched, tertiary reticulum not visible; laminar glands dense to rather sparse, slightly prominent beneath. *Inflorescence* (1–)3–11-flowered, dichasial (2–3 nodes) then monochasial, from 1(2) nodes, with short lateral branches from up to 10 nodes immediately below, the whole narrowly pyramidal to cylindric; pedicels 1·5–2 mm long; bracts and bracteoles ovate to linear. *Flowers* (6–)8–12 mm in diam., stellate; buds ovoid, subacute to acute. *Sepals* 3–6 × 1–2·5 mm, unequal, imbricate, outer ovate to lanceolate, inner lanceolate to narrowly oblong, acute to subacuminate; veins 3–7, 3 or more usually becoming prominent; glands linear, punctiform in distal ¼ – ½. *Petals* yellow to orange, (5–)6–8 × (2·5–)3–4 mm, 1·6–2 × sepals, oblong-obovate; apiculus acute; glands linear to punctiform. *Stamens* 30–63, not or obscurely 3(4)-fascicled, longest 3–4 mm long, *c.* 0·5 × petals. *Ovary c.* 1·5 × 1 mm, ovoid-subglobose; styles 3(4), 3–4 mm long, 2–2·3 × ovary, spreading; stigmas subcapitate to capitate. *Capsule* 5 × 2–3 mm, ovoid-subglobose, not rostrate, shorter than sepals. *Seeds* 0·8–0·9 mm long; testa very finely ribbed-scalariform (markings obscure).

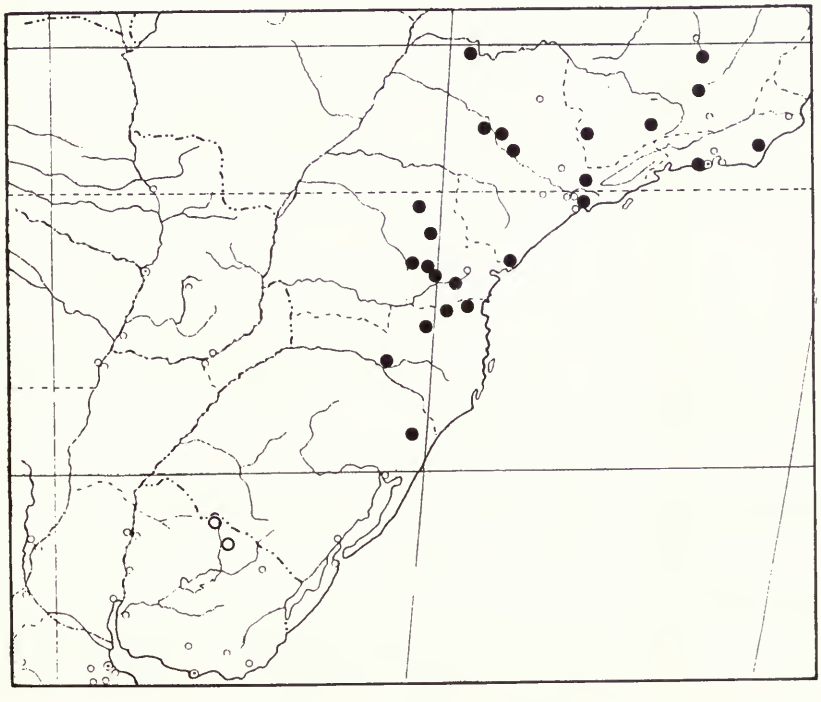
Dry, often stony pastures and slopes; 800–1600 m.

Brazil (Minas Geraes, São Paulo, Paraná, northern Santa Catarina, also? Rio Grande do Sul.

BRAZIL. Minas Geraes: Rodrigo Silva près d'Ouro Preto, 9 May 1892 (fl & fr), *Glaziou* 18913 (C, K, P); Hermello Alves, 1100 m, 24 December 1949 (fl), *Duarte* 2335 (NY, P). São Paulo: Serra da Bocaina, sud vom Itatiaya, 1600 m, 7 December 1952 (fl), *Markgraf* 10357 (Z); Mogy dos Cruces, 19 April 1889 (veg), *Glaziou* 17476 (C, K, G, P). Paraná: mun. Curitiba, Rio Atuba, 23 November 1970 (fl), *Hatschbach* 25605 (C, MO, NY); Turma no. 23, *c.* 800 m, 19 October 1914 (fl), *Dusén* 15724 (BM, GH, MO, S); Capivarí, 21 October 1908 (fl), *Dusén* 54/78 (A, F, G, GH, MO, NY, P, S, Z). Santa Catarina: campos do sul do Rio das Morocubas, n.d.(fl), *F. Müller* s.n. (P); (?) mun. Campo Alegre, Morro de Iquererim, 1400 m, 18 October 1957 (fl), *Reitz & Klein* 5223 p.p. (US). Rio Grande do Sul: São Francisco de Paula, Taimbezinho, 3 December 1971 (fl & fr), *J.C., F.M.L., A.M.G. & M.L.P.* ICN 9316 (U).

H. ternum can be distinguished from *H. cordatum* by the smaller flowers and the heteromorphic or uniformly narrow or small leaves. The most primitive forms (in Minas Geraes and São Paulo) have ovate or ovate-triangular leaves near the inflorescence, but the lowermost leaves on the shoot are linear-lanceolate to linear. Forms in which the leaves are long, narrow, and with recurved margins occur in all the northern states in its range, as well as in northern Santa Catarina. In Paraná, however, there is a trend towards smaller isomorphic leaves which become too small to allow the recurved-margin character to be expressed. In such small-leaved, small-flowered forms, the main stem occasionally bears leaves in whorls of 3, and the type specimen is one of these.

The extreme form of the type specimen has resulted in repeated misunderstanding of *H. ternum*, specimens belonging to it having been included by various authors in *H. rigidum*, *H denudatum*, and *H. sellowianum*. As will be seen elsewhere in this work, these names apply to quite different taxa. The inappropriateness of the epithet *ternum* to all but a small part of the species is no reason (according to the International Code of Botanical Nomenclature) for not using it.

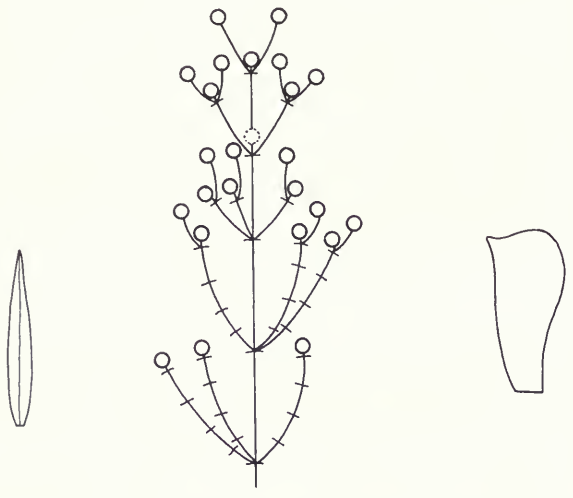


Map 15 Sect. 30: 8. *H. ternum* ●; 9. *H. legrandii* ○.

9. **Hypericum legrandii** Lyman B. Smith in *J. Wash. Acad. Sci.* **48**: 314 (1958). Type: Uruguay, Rivera, 17 December 1901 (fl), *Berro* 1720 (MVM-holotype; US!-isotype).

Map 15.

H. ericoides Arechav. in *An. Mus. Hist. nat. Montevideo* **4**: 18 (1902), non. L. (1753). Type as for *H. legrandii*.



Subshrub 0·45–0·8 m tall, erect, branched above only, with branches strict, lateral, (?) rarely in whorls of 3. *Stems* dull red-brown, persistently 4–6-lined, ancipitous or triquetrous at first, soon 2–3-lined, eventually terete, cortex exfoliating in strips; internodes 5–7(–10) mm long, shorter than leaves. *Leaves* sessile, imbricate-appressed, paired or usually 3-whorled; lamina 5–11 × 0·8–1 mm, acerose, margin plane, conduplicate or carinate proximally, concolorous, coriaceous; apex acute, base parallel-sided, free; vein 1, unbranched; laminar glands dense, slightly prominent beneath. *Inflorescence c.* 14–20-flowered, trichasial on main stem, dichasial on laterals (2 nodes) then monochasial, from 2 nodes, with short lateral branches from up to 12 nodes immediately below, the whole narrowly cylindric; pedicels 1–2 mm long; bracts and bracteoles linear-subulate. *Flowers c.* 8 mm in diam., stellate; buds narrowly ovoid, acute. *Sepals* (4–)5–6 × 1 mm, subequal, subimbricate, linear-lanceolate to linear, acute; veins 5, not prominent; glands linear to mostly punctiform. *Petals* yellow to orange, *c.* 5–7 × 3 mm, 1–1·2 × sepals, oblong-obovate; apiculus acute; glands linear. *Stamens c.* 30, obscurely or not fascicled, longest *c.* 4 mm long, *c.* 0·6 × petals. *Ovary* 1·5–2 × 1–1·5 m, elliptic-subglobose; styles 3, 3–4 mm long. 2 × ovary, spreading; stigmas scarcely capitate. *Capsule* 5–6 × 2·5–3 mm, cylindric-ovoid, about equalling sepals. *Seeds* not seen.

Habitat unknown.

Uruguay (Rivera).

URUGUAY. Rivera: Rivera, n.d. (fl), *Felippone* 5070 (K); Chacra Santurio, 9 December 1907 (fl), *Berro* 4865 (US).

H. legrandii shares the tendency shown by reduced forms of *H. ternum* to have leaves in 3's, but its leaves and sepals are narrower.

10. **Hypericum denticulatum** Walter, *Fl. carol.*: 190 (1788); Gmelin, *Syst. nat.* **2**: 1159 (1791); Fern. in *Rhodora* **44**: 43 (1942); Fern. & B. G. Schubert in *Rhodora* **50**: 205 (1948); P. Adams in *Rhodora* **64**: 241 (1962); Rodríguez Jiménez in *C.r. Soc. Biogéogr.* **432**: 87, map 1 (1972); in *Mems Soc. Cienc. nat. La Salle* **33**: 99, ff. 1f, 2d (1973); D. H. Webb, *Biosyst. Study Hypericum sect. Spachium in eastern N. Am.*: 272 (1980). Types: U.S.A., Carolina, *Walter* (holotype, specimen not traced); U.S.A., Carolina, 1798–1800, *Bosc* (P-neotype; FI, G!, US [8]-isoneotypes) (Rodríguez Jiménez, 1973).

Perennial herb 0·2–0·75 m tall, erect, branched mostly from the base, sometimes also from upper part of stem. *Stems* green, 4-lined, densely gland-dotted; internodes 8–47 mm long, exceeding leaves. *Leaves* sessile, spreading from base to appressed; lamina 5–35(–40) × 3–16 mm, lanceolate or ovate to elliptic or oblong-elliptic or obovate, margin plane but sometimes recurving when dry, concolorous or almost so, not glaucous, subcoriaceous; apex acute to subrounded, base cuneate to rounded-subamplexicaul, sometimes subdecurrent, free; basal veins 1–5, if 1 then with 2–3 pairs of main lateral branches, the midrib otherwise apparently unbranched, tertiary reticulation not visible; laminar glands dense, not or scarcely prominent. *Inflorescence* up to *c.* 25-flowered (terminal), monochasial after *c.* 4th grade, with up to *c.* 15-flowered lateral dichasial/monochasial branches from up to 6 nodes below, the whole broadly pyramidal to corymbiform, occasionally with lateral flowering branches below; pedicels 2–4 mm long; bracts 3–6 mm long, lanceolate to subulate. *Flowers* 5–13 mm in diam., stellate. *Sepals* 3–8 × 1·5–4 mm, ovate or lanceolate to elliptic or obovate, acute to acuminate; veins 3–5, rarely branched, all prominent; glands linear, distally punctiform. *Petals* yellow to orange-yellow, 5–10 × 4–6 mm, *c.* 1·6–2 × sepals, obovate; apiculus obtuse; glands linear, interrupted distally. *Stamens* 50–80, irregularly grouped, longest 3–5 mm long, *c.* 0·5–0·6 × petals. *Ovary* 1·5–2 × 1–1·5 mm, ovoid; styles 3, 2–4 mm long, 1·3–2 × ovary, divergent-incurved; stigmas capitate. *Capsule* 3–5 × 2–3 mm, ovoid to rostrate-subglobose, shorter than to shortly exceeding sepals. *Seeds* 0·45–0·9 mm long, testa obscurely linear-reticulate to finely ribbed-scalariform. 2n = 24, 48.

Fields, roadsides, ditches, and open woods on sandy or clay soils; 0–500 m. South-eastern U.S.A. (New Jersey south to Georgia and northern Florida, west to southern Illinois, Tennessee, and Louisiana).

H. denticulatum is most closely related to 1c. *H. rigidum* subsp. *sellowianum* from south-eastern Brazil, the wide disjunction in distribution being probably the result of ancient long-distance dispersal (see p. 11). The epithet 'denticulatum' was given by Walter because he was obviously impressed by the apiculus on the petal, whereas *H. denticulatum* Kunth (= *H. galinum* S. F. Blake) was named on account of the denticulate leaf margin.

The *H. denticulatum* complex has usually been treated as comprising two taxa, which have been regarded as species or, more recently, as varieties. *H. denticulatum* sensu stricto is almost confined to the eastern Coastal Plain and has shorter, broader, often more obtuse leaves and sometimes broader sepals than '*H. virgatum*', which is absent from the Coastal Plain but occurs from the adjacent uplands westward to the Mississippi. Fernald & Schubert (1948) reviewed the earlier treatments of the group. They divided *H. denticulatum* into

[8]See footnote p. 66.

three varieties, var. *typicum* (= var. *denticulatum*), var. *acutifolium*, and var. *recognitum*, the last two comprising *H. virgatum* sensu lato and differing in leaf-shape. In var. *acutifolium* they included Georgian specimens described by Keller (1923) as *H. harperi*.

Gleason (1952) and Gleason & Cronquist (1963) recognized only two varieties, as did Adams (1973), who specifically mentioned that var. *recognitum* was doubtfully distinct from var. *acutifolium*. Rodríguez Jiménez (1973) agreed that there are two varieties but used an illegitimate epithet, var. *virgatum* (Lam.) Rodríguez Jiménez, for the narrow-leaved one. Webb (1980), however, while still adopting the rank of variety for the subordinate taxa of *H. denticulatum*, showed that Keller's *H. harperi* was distinct from *H. denticulatum* var. *acutifolium* morphologically, ecologically, and chemically, and that it has a distinct distribution. Webb used the name *H. incertum* Steudel (= *Brathys lanceolata* Spach, non *Hypericum lanceolatum* Lam.) for this taxon in anticipation of seeing the type. Subsequently, however (in litt., 1980), he found that Spach's type belonged to *H. denticulatum* var. *acutifolium*; and so the correct name for this taxon (which I agree with him in treating as a species) is *H. harperi* R. Keller.

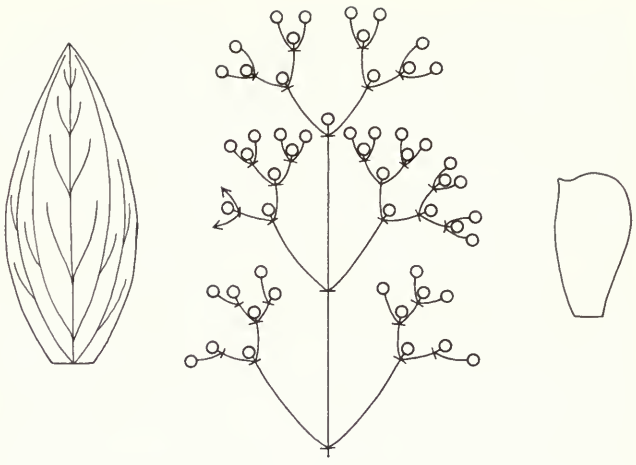
Webb also confirmed earlier reports (Rogers, 1965; Robson & Adams, 1968) of the chromosome numbers n = 12 and 24 for *H. denticulatum* (sensu lato), showing that n = 12 is found in both varieties as well as in *H. harperi*, whereas n = 24 is apparently confined to var. *denticulatum*.

Lastly, the two taxa that Webb and others treat as varieties differ in leaf shape, in leaf length relative to the internodes, in sepal shape, and in seed size and ornamentation, and they have distinct chromatographic profiles and distributions (Webb, 1980). I therefore regard the rank of subspecies as more appropriate for them than variety.

10a. **H. denticulatum** subsp. **denticulatum**

Map 16.

H. laevigatum Aiton, *Hortus Kew.* **3**: 106 (1789). Type: cultivated, England, Kew, introduced 1772, *Samuel Martin* (no specimen found).



H. angulosum Michaux ex Willd., *Sp. pl.* **3**: 1454 (1802); Michaux, *Fl. bor.-amer.* **2**: 78(1803); Torrey & A. Gray, *Fl. N. Amer.*: 164 (1838). Type: U.S.A., Carolina, 'in humidis a Carolina ad Floridam', *Michaux* (B-WILLD-holotype, TENN-photograph; P; for photograph see *Rhodora* **50**: 202, t. 1109, f.1 (1948)).

Brathys linoides Spach, *Hist. nat. vég.* **5**: 452 (1836), in *Annls. Sci. nat.* (Bot.) II, **5**: 367 (1836), nom. illegit. (Art. 63). Type as for *Hypericum angulosum* Michaux ex Willd.

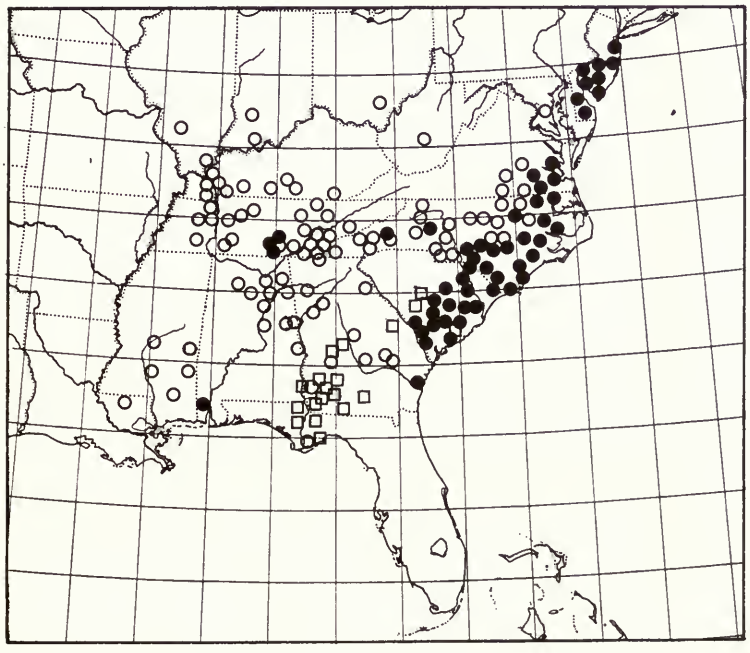
H. virgatum sensu Coulter in *Bot. Gaz.* **11**: 106(1886), pro parte excl. var. *acutifolium*.

H. virgatum var. *ovalifolium* Britton in *Trans. N.Y. Acad. Sci.* **9**: 10 (1889). Type: U.S.A., New Jersey, Spring Lake, 31 July 1887, *Lighthipe* s.n. (NY-lectotype, Webb (1980), ined.). *Rugel* 378, selected by Rodriguez Jiménez (1973), is not type material. Webb's selection is confirmed here.

H. denticulatum var. *ovalifolium* (Britton) S. F. Blake in *Rhodora* **17**: 135 (1915); Fern. & B. G. Schubert in *Rhodora* **50**: 206 (1948).

H. denticulatum var. *typicum* Fern. & B. G. Schubert in *Rhodora* **50**: 207 (1948).

Type as for *H. denticulatum* Walter.



Map 16 Sect. 30: 10a. *H. denticulatum* subsp. *denticulatum* ●; 10b. *H. denticulatum* subsp. *acutifolium* ○; 11. *H. harperi* □. Data from Webb (1988).

Icon: Gleason, *New Br. & Br. Ill. Fl.* **2**: 542 (1952), as *H. denticulatum* var. *ovalifolium*.

Stems 0·2–0·7 m tall; lower internodes usually exceeding leaves. *Leaves* 5–20(–24) × 5–15 mm, usually appressed, broadly or narrowly ovate to elliptic or narrowly obovate, acute to subrounded. *Sepals* 4–8 × 2–4 mm, ovate or lanceolate to elliptic or obovate (especially lower flowers), acute. *Petals* yellow-orange, 5–10 × 4–6 mm. *Seeds* (0·45) 0·5–0·65 mm. 2n = 24, 48 (n = 12, 24 – Webb, 1980).

Moist ditches, pine barrens, and savannahs; 0–400 m.

South-eastern U.S.A. (coastal plain from New Jersey south to Georgia, with disjunct populations in western North Carolina, central Tennessee, and southern Alabama).
U.S.A. Alabama;[9] *Mobile Co., Dauphin Island, near Houston Pl., 15 July 1965, *Deramus* 568 (NCU). Delaware; *Kent Co., Felton, August 1867, *Canby* s.n. (NY). *Sussex Co., E. of Ellendale, 5 September 1925, *Pennell* 12870 (MO). Georgia: *McIntosh Co., 2·1 km N. of Fort Berrington road, 8 July 1972, *Bozeman* 758 (NCU). New Jersey: Atlantic Co., Hammonton, 18 August 1923 (fl), *Bassett* (TAI); Burlington Co., *c.* 23 km S. of Chatsworth, 20 August 1948 (fl), *Lawrence & Dress* 557 (BM); Camden Co., Winslow, 30 September 1908, *Pennell* 1777 (NY). North Carolina: Buncombe Co., near Biltmore, 21 July 1897 (fl), *Herb. Biltmore* 523b (BM, W); Hoke Co., *c.* 5.3 km SE. of Antirch, 0·5 km W. of Robeson Co. line, 10 October 1957 (fr), *Ahles* 36459 (H); *Northampton Co., near Margaretsville, 28 July 1893, *Heller* 1154 (GH, MO, NY). South Carolina: *Berkeley Co., *c.* 5 km S. of Bonneau, 13 July 1927, *Wiegnand & Manning* 2018 (GH); *Georgetown Co., 11 km E. of Andrews, 27 June 1939, *Godfrey & Tryon* 156 (MO, NY, TENN, US). Tennessee: Coffee Co., Tullaloma, 10 August 1899 (fl), *Herb. Biltmore* 523h (H, W); *Warren Co., NE. of Morrison, 18 June 1948, *Fairchild* et al. 7565 (TENN). Virginia: Sussex Co., *c.* 6·5 km N. of Homeville, 19–20 August 1936 (fl), *Fernald & Long* 6280 (K), *6837 (GH, NY, US); York Co., NW. of Grafton, 18 September 1937 (fr), *Fernald & Long* 7531 (BM, GH, K, MO, NY, US).

The disjunct populations of subsp. *denticulatum* in the more interior regions (North Carolina, Tennessee) were thought by Webb (1980) to be possibly relicts, whereas he regarded the Alabama population as probably a recent introduction.

10b. **H. denticulatum** subsp. **acutifolium** (Elliott) N. Robson, **stat. nov.**

Map 16.

H. virgatum Lam., *Encycl.* **4**: 158 (1796); Coulter in *Bot. Gaz.* **11**: 106 (1886). Type: U.S.A., without precise locality or collector (P-JUSS-holotype; GH*-photograph; see also *Rhodora* **50**: 206, t.1111, f. 1 (1948).

H. acutifolium Elliott, *Sketch bot. S. Carolina* **2**: 26(1821); Walp., *Repert. bot. syst.* **1**: 388 (1842). Type: U.S.A., Georgia, Milledgeville, *Elliott* (?) 19 (CHARL*-holotype; GH*-photograph).

Brathys erythraeae Spach, *Hist. nat. vég.* **5**: 452 (1836), in *Annls. Sci. nat.* (Bot.) II, **5**: 367 (1836). Type: U.S.A., Carolina, *Leconte* s.n. (P*-holotype).

Brathys lanceolata Spach, *Hist. nat. vég.* **5**: 453 (1836), in *Annls. Sci. nat.* (Bot.) II, **5**: 367 (1836). Type: U.S.A., 'midi des Etats Unis', *Leconte* (P*-holotype).

H. erythraeae (Spach) Steudel, *Nomencl. bot.* 2nd. ed. **1**: 787 (1840). Type: as for *Brathys erythraeae* Spach.

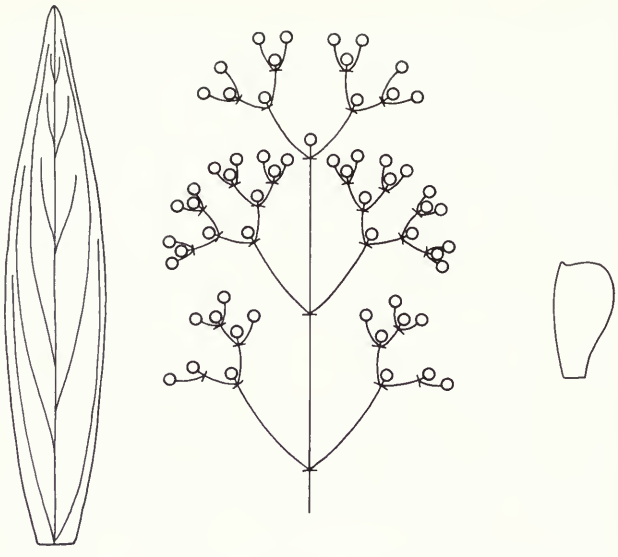
H. incertum Steudel, *Nomencl. bot.* 2nd ed. **1**: 788 (1840). Type as for *Brathys lanceolata* Spach (1836), non *Hypericum lanceolatum* Lam. (1797).

H. virgatum var. *acutifolium* (Elliott) Coulter in *Bot. Gaz.* **11**:106 (1886).

H. denticulatum var. *acutifolium* (Elliott) S. F. Blake in *Rhodora* **17**: 134 (1915); Fern. & B. G. Schubert in *Rhodora* **50**: 208, t.1111, f.l. (1948); Fern., *Gray's Man. Bot.* 8th ed.: 1013 (1950), pro parte; Radford, H. E. Ahles & Bell, *Man. vasc. fl. Carolinas*: 716 (1968); D. H. Webb, *Biosyst. study Hypericum sect. Spachium in eastern N. Am.*: 283 (1980).

H. denticulatum var. *recognitum* Fern. & B. G. Schubert in *Rhodora* **50**: 208, t. 1110 (1948). Type: U.S.A., Tennessee, Knoxville, July 1895, *A. Ruth* (GH!-holotype; ILL*, US-isotypes).

H. denticulatum var. *virgatum* (Lam.) Rodríguez Jiménez [in *C.r. Soc. Biogéogr.* **432**: 87, 88 (1972), sine basion.] in *Mems Soc. Cienc. nat. La Salle* **33**: 100 (1973), nom. illegit. superfl.



Icon: Gleason, *New Br. & Br. Ill. Fl.* **2**: 542 (1952), as *H. denticulatum*.

Stems 0·4–0·75 m tall, usually branched above; lower internodes usually shorter than leaves. *Leaves* 10–35(–40) × 3–8(–12) mm, ascending to divergent, lanceolate to oblong-elliptic or obovate, acute to obtuse. *Sepals* 3–3·5 × 1·5–2·5 mm, narrowly ovate to lanceolate, acute to acuminate. *Petals* yellow to yellow-orange, 6–10 × 5–6 mm. *Seeds* (0·5)0·6–0·8(0·9) mm long. 2n = 24 (n = 12 – Webb, 1980).

Dry roadsides, fields, and open woods; 0–*c.* 700 m (or higher?).

South-eastern U.S.A. (Maryland to southern Illinois and south to Florida and Louisiana; not east coastal).
U.S.A. Alabama: without precise locality, 1832 (fl), *Drummond* s.n. (K, W); * De Kalb Co., near former Lawson Ford on Town Creek, Sand Mt., 14 August 1945, *Harper* 399 (US). Arkansas: Saline Co., Bauxite, 90 m, 25 September

[9]In this part (Part 8), an asterisk (*) before a locality or after a herbarium symbol indicates that the specimen has been recorded by D. H. Webb, C. Rodríguez Jiménez, or P. Bamps, but not by me.

1965 (fr), *Demaree* 35005 (BM). Florida: Franklin Co., Apalachicola prope Mount Vernon, August 1843 (fr), *Rugel* 671 (BM, GH, K, NY, SMU, US, W). Georgia: Thomasville, 30 September 1903 (fr), *Mrs A. P. Taylor* (H); *Catoosa Co., Chickamauga Creek, near Ringgold, 6–12 August 1895, *Small* s.n. (NY); Sumter Co., Leslie, 15 September 1900, *Harper* 657 (BM, K, NY, US, W). Illinois: Maysville, – July –, *Buckley* 1b (K); *Pope Co., S. of Rock, 21 July 1948, *Winterringer* 4026 (ILL). Indiana: *Spencer Co., *c.* 5 km NW. of Chrisney, near Little Pigeon Creek, 4 September 1939, *Deam* 59465 (GH, NY). Kentucky: *Calloway Co., between Murray and New Concord, 20 July 1937, *Smith & Hodgdon* 4084 (GH, NY, US); *Trigg Co., Kentucky Lake, S. of Frenton, 26 July 1954, *Ahles* 8123 (ILL, NCU). Louisiana: Covington, August 1832 (fl), *Drummond* 260 (BM, K); *St. Helena par., *c.* 6·5 km NE. of Greensburg, 4 August 1971, *Allen* 1319 (GA, SMU). Maryland: *Prince George's Co., *c.* 1·5 km SE. of Laurel along Bear Branch. 12 August 1922, *Wherry* s.n. (US). Mississippi; *Chickasaw Co., *c.* 6 km SE. of Pontotoc-Chickasaw Co. line on Miss. 41, 23 June 1964, *Pullen* 64527 (GA, NCU); *Clarke Co., *c.* 1·5 km SW. of Pachuta, 20 July 1934, *Harper* 3238 (GH, MO, NY, US). North Carolina: Alexander Co., 3·2 km NW. of Vashti, 9 September 1966 (fl & fr), *Bozeman, Ramseur & Radford* 4510 (BM); Orange Co., Mason Farm road, *c.* 200 m N. of Golf Course, 24 June 1961 (fl & fr), *Bell* 17150 (H); Buncombe Co., Biltmore, 21 July 1897 (fl), *Herb. Biltmore* 523b (BM, GH*, ILL*, MO*, NY*, US*, W). Ohio: *Jackson Co., near Jackson, 20 August 1937, *Drushel* 10759 (MO, NY, US). South Carolina: *Aiken Co., Vancluse, 6 August 1898, *Eggert* s.n. (MO, NY, US); Hampton Co., S.C. Rt. 28, 2·7 km SE. of Early Branch, 29 June 1956, *Ahles* 15723 (K). Tennessee: Marion Co., Kimball, 5 July 1892 (fl), *Middleton* s.n. (BM); *Van Buren Co., Falls Creek Falls State Park, 20 July 1947, *Shanks* et al. 2991 (SMU, TENN). Virginia: *Dinwiddie Co., E. of McKenny, 13 October 1941, *Fernald & Long* 13976 (GH, NY, US); *Greenville Co., NE. of Orion, near Readjuster Bridge over Nottoway R., 13 June 1940, *Fernald & Long* 12132 (GH). West Virginia: New River, Hawk's Nest, July 1880 (fl & fr), *Porter* s.n. (K); *Fayette Co., edge of New River, Cotton Hill, 26 June 1941, *Sharp* s.n. (TENN).

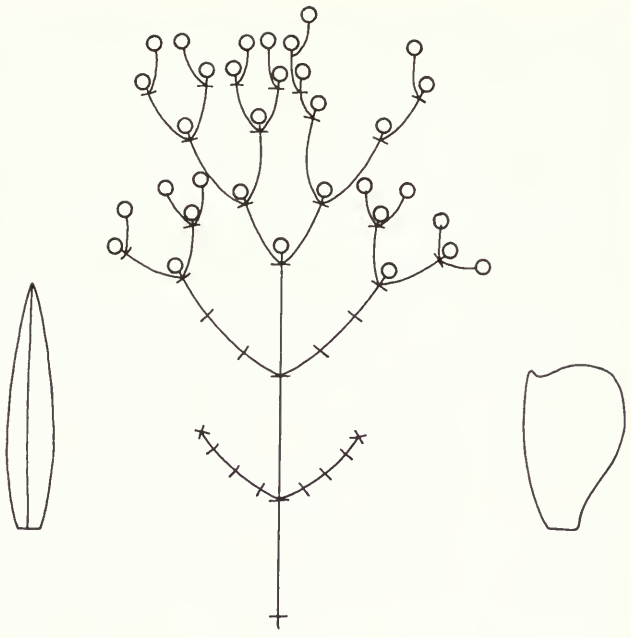
The Florida collections ('*H. virgatum* var. *revolutum*' R. Keller) have the small flowers and narrow leaves of *H. harperi* but not the spongy stem base, thus indicating that, although morphologically intermediate in some respects, the habit is dry like that of *H. denticulatum* subsp. *acutifolium*.

11. **Hypericum harperi** R. Keller in *Bot. Jb.* **58**: 198 (1923); in Engl. & Prantl, *Nat. Pflanzenfam.* 2nd ed. **21**: 183 (1925). Type: U.S.A., Georgia, Sumter Co., 9 July 1900 (fl), *Harper* 1028 (B†-lectotype (Fernald & Schubert (1948); BM!, GH!, MO*, NY*, US*-isolectotypes); for photograph see *Rhodora* **50**: t.1111, f. 3 (1948). The selection of *Harper* 1006 as lectotype by Rodríguez Jiménez (1973) is therefore unacceptable, being later; and the Berlin specimen, being the only one seen by Keller, must be the lectotype, not the BM one as designated by Webb.

Map 16.

H. denticulatum var. *acutifolium* sensu Fern. & B. G. Schubert in *Rhodora* **50**: 208 (1948, pro parte); Fern., *Gray's Man. Bot.* 8th ed.: 1013 (1950), pro parte.

H. denticulatum var. *virgatum* (Lam.) Rodríguez Jiménez in



Mems Soc. Cienc. nat. La Salle **33**: 100 (1973), pro parte, quoad syn. *H. harperi*.

H. incertum sensu D. H. Webb, *Biosyst. Study Hypericum sect. Spachium in eastern N. Am.*: 296(1980), non Steudel (1840).

Perennial herb 0·3–1 m tall, erect, branched from the base and usually with flowering branches from median and upper stem nodes. *Stems* green, 4-lined, densely gland-dotted, aerenchymatous at the base; internodes 8–20 mm long, about equalling leaves. *Leaves* sessile, ascending, deflexed when fading, lamina 10–30 × 3–5(–8) mm, narrowly oblong-elliptic (lower) or lanceolate to linear-lanceolate, margin plane, concolorous, not glaucous, subcoriaceous?; apex acute, base cuneate to rounded-subamplexicaul, sometimes subdecurrent; basal or near-basal veins 1–3(–5), midrib unbranched or with 1(2) pairs of branches, tertiary reticulation not visible; laminar glands dense, not prominent. *Inflorescence* up to *c.* 30-flowered, monochasial after *c.* 4th grade, with branches from up to 16 lower nodes, the whole broadly pyramidal to subcorymbiform; pedicels 1·5–2 mm long; bracts 2–6 mm long, lanceolate to subulate. *Flowers c.* 4–10 mm in diam., stellate. *Sepals* 3–5 × 0·8–1 mm, often unequal, lanceolate, acute to acuminate; veins 3–5, unbranched, all or only midrib prominent; glands linear, distally punctiform. *Petals* orange-yellow, 6–10 × 5–7 mm, *c.* 2 × sepals, obovate; apiculus obtuse; glands linear, interrupted distally. *Stamens* 50–80, irregularly (?) grouped, longest 3–6 mm long, *c.* 0·5 × petals. *Ovary c.* 1–1·5 × 0·7–1 mm, ovoid; styles 3, 2–4 mm long, 2–3 × ovary, divergent-incurved; stigmas capitate. *Capsule* 3–4·5 × 2–2·5(–3 ?) mm, ellipsoid to rostrate-subglobose, shorter than or equalling sepals. *Seeds* 0·5–0·6(0·65) mm long, testa obscurely linear-reticulate to irregularly reticulate. 2n = 24 (n = 12 – Webb, 1980).

Open *Taxodium* swamps and wet pine barrens; lowland.

South-eastern U.S.A. (coastal plain of South Carolina, Georgia, and northern Florida).

U.S.A. Florida:* Gadsden Co., *c.* 5 km NW. of Gretna, 10 October 1959, *Godfrey* 58994 (GH, NCU, SMU); Jackson Co., Sneads, 20 October 1900 (fr). *Curtiss* 6731 (GH*, ILL*,

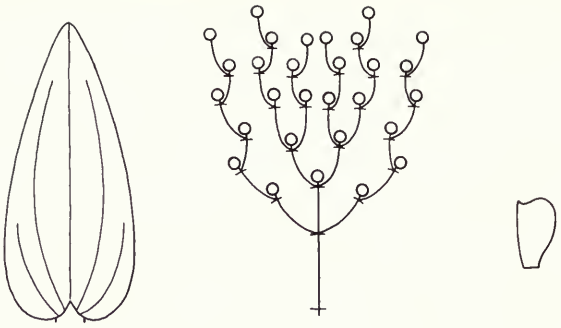
K, MO*, NY*, US*). Georgia: Sumter Co., W. of Leslie, 9 October 1900 (fr), *Harper* 1731 (BM, GH);* Miller Co., *c.* 11 km ESE. of Colquitt, 8 July 1947, *Thorne* 5209 (MO, NY, US);* Seminole Co., 2·4 km E. of Donaldsonville, 26 October 1963, *Godfrey* 63207 (NCU, SMU, US). South Carolina:* Berkeley Co., 9·5 km SW. of Monck's Corners, 7 August 1939, *Godfrey & Tryon* 1454 (NY, TENN, US); *Orangeburg Co., Eutawville, 6–11 September 1900, *Eggleston* 5017 (GH, MO, NY).

Despite the rather scathing comments by Fernald & Schubert (1948: 207) about Keller's habitual assumption that there were eastern North American species awaiting recognition, I agree with Webb (1980) that *H. harperi* is a good candidate for such recognition. Although clearly closely related to *H. denticulatum* subsp. *acutifolium*, it differs from the latter in its aquatic habitat and correlated spongy, aerenchymatous stem base, as well as in having rather smaller flowers and more stem branches. The Floridan collections of *H. denticulatum* subsp. *acutifolium* are intermediate in the last two characters, though apparently not in habitat. In addition, Webb (1980) has shown that *H. harperi* contains C-glycosyl flavones, whereas *H. denticulatum* does not.

In addition to these ecological, morphological, and chemical differences, *H. harperi* remains distinct in localities where it grows alongside *H. denticulatum* subsp. *denticulatum*, presumably because populations of the latter taxon are mostly tetraploid (2n = 48) and would therefore form triploid hybrids with *H. harperi*.

12. **Hypericum setosum** L., *Sp. pl.*: 787 (1753); R. Keller in *Bull. Herb. Boissier* II, **8**: 179 (1908), in Engl. & Prantl, *Nat. Pflanzenfam.* 2nd ed. **21**: 181 (1925); Rodríguez Jiménez in *C.r. Soc. Biogéogr.* **432**: 87, map 1 (1972), in *Mems Soc. Cienc., nat. La Salle* **33**: 132, fig. 1d (1973); N. Robson in *Taxon* **29**: 273 (1980); D. H. Webb, *Biosyst. Study Hypericum sect. Spachium in eastern N. Am.*: 303 (1980). Type: U.S.A., Virginia, *Clayton* 153 (BM!-lectotype – Robson, 1980).

Fig. 14A, Map 17.

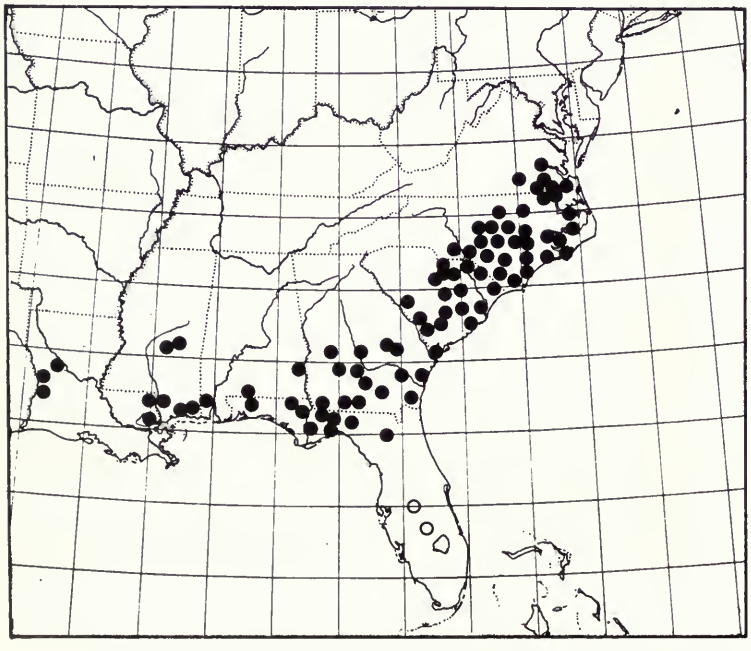


Ascyrum villosum L., *Sp. pl.*: 788 (1753); Miller, *Gard. dict.* 8th ed.: No. 2 (1768). Type: *Hypericum virginianum frutescens pilosissimum* Plukenet, *Phytographia*: t. 245, f.6 (1691) (lectotype – Robson, 1980).

Hypericum villosum (L.) Crantz, *Inst. rei herb.* **2**: 520 (1766), non Crantz, *Stirp. austr. fasc.* **2**: 62 (1763), 2nd ed.(96 (1769).

Hypericum pilosum Walter, *Fl. carol.*: 190 (1788); Gmelin, *Syst. nat.* **2**: 1159 (1791); Choisy, *Prodr. monogr. Hypéric.*: 49 (1821), in DC., *Prodr.* **1**: 549 (1824); Elliott, *Sketch bot. S. Carolina* **2**: 25 (1821); Sprengel, *Syst. veg.* **3**: 346 (1826); Torrey & A. Gray, *Fl. N. Amer.* **1**: 163 (1838); D. Dietr., *Syn. pl.* **4**: 1235 (1847); Trevir., *Hyper. sp. animadv.*: 9 (1861); Chapman, *Fl. South. U.S.*: 41 (1872); Coulter in *Bot. Gaz.* **11**: 106 (1886); C. Mohr in *Contr. U.S. natn Herb.* **6**: 622 (1901). Types: U.S.A., Carolina, *Walter* (?-holotype lost or destroyed); S. Carolina, Berkeley Co., *c.* 22 km S. of Moncks Corners, 11 August 1939, *Godfrey & Tryon* 1424 (NY*-neotype; GH*, US*-isoneotypes – Webb, 1980).

H. simplex Michaux, *Fl. bor.-amer.* **2**: 80 (1803); Poiret in Lam., *Encycl.* Suppl. **3**: 698 (1813); Pursh, *Fl. Amer. sept.* **2**: 379 (1814); Elliott, *Sketch bot. S. Carolina* **2**: 25 (1821); Choisy, *Prodr. monogr. Hypéric.*: 49 (1821), in DC., *Prodr.* **1**: 549 (1824); Sprengel, *Syst. veg.* **3**: 346 (1826), nom. illegit. superfl. (based on *Ascyrum villosum* L.).



Map 17 Sect. 30: 12. *H. setosum* ●; 13. *H. cumulicola* ○. Data from Webb (1980).

Fig. 14 A. *H. setosum*: (a) habit; (b) stem with leaves; (c) leaf; (d) sepal; (e) petal; (f) stamens (partly cut away) and young capsule. B. *H. cumulicola*: (g) habit; (h) stem with leaves; (i) petal; (j) old stamens (partly cut away) and ripe capsule (a, g × ½; b × 1; c, h, × 2; d–f, i, j × 6). A (a–c) *Gray* 10; (d–f) *Sargent* 10613. B. *Lakela* 24561.

H. nuttallii G. Don, *Gen. syst.* **1**: 607 (1831), nom. illegit. superfl. (based on *H. pilosum* Walter).
Brathys tomentosa Spach, *Hist. nat. vég.* **5**: 453 (1836), in *Annls. Sci. nat.* (Bot.) II, **5**: 367 (1836), nom. illegit. superfl. (based on *H. simplex* Michaux).

Icon: Plukenet, *Phytographia*: t. 245, f. 6 (1691).

Perennial or annual herb 0·2–0·7(–0·8) m tall, erect, unbranched below inflorescence or occasionally with 1–2 flowering branches from upper stem nodes. *Stems* green, 4-lined, sparsely (?) gland-dotted, scabrous-tomentose to pilose; internodes 5–20 mm long, lower equalling leaves, upper longer than them. *Leaves* sessile, appressed to ascending, spreading when fading; lamina 4–15 × (1·5)2–7 mm, narrowly ovate or lanceolate to narrowly oblong-elliptic (or lower sometimes oblanceolate), margin recurved, concolorous, not glaucous, subcoriaceous, scabrous-tomentose to pilose; apex acute to obtuse, base rounded-subamplexicaul to parallel-sided, not decurrent, free; basal vein(s) 1(–5), midrib without or with 1 pair of branches, tertiary reticulation not visible; laminar glands dense, slightly prominent beneath. *Inflorescence* up to *c.* 30-flowered (terminal), monochasial after 1st or 2nd grade, sometimes with up to 15-flowered dichasial/monochasial or usually wholly monochasial branches from up to 5 lower nodes, occasionally with 1–2 pairs of subsidiary flowering branches below, the whole cylindric to subcorymbiform; pedicels 1·5–2 mm long; bracts 2 mm long, lanceolate, setulose-ciliate. *Flowers c.* 5–11 mm in diam., stellate. *Sepals* (2·5–)3–5 × 1·5–2·5 mm, subequal, ovate to ovate-lanceolate or obovate, acute; veins 5–7, unbranched, only midrib or all veins slightly prominent, but less so than glands; glands linear, distally punctiform; margin setulose-ciliate, lamina sparsely setulose to glabrous. *Petals* (deep ?) yellow, 4–7 × 4–7 mm, 1·5–2 × sepals, obovate; apiculus acute; glands linear, interrupted distally. *Stamens* (15) 20–40, almost free, longest 2·5–3 mm long, 0·65–0·75 × petals. *Ovary c.* 1·5 × 0·8 mm narrowly ovoid-ellipsoid; styles 3(4), 1·5–2 mm long, 1–1.3 × ovary, outcurving; stigmas ± broadly capitate. *Capsule* (3·5–)4–5 × 2–3 mm, ovoid to ellipsoid-subglobose, equalling or slightly exceeding sepals. *Seeds* 0·4–0·6 mm long, ecarinate; testa linear-reticulate. 2n = 12 (Webb, 1980).

Wet ditches, bogs, savannahs, and wet pinelands on sandy soil; lowland.

South-eastern U.S.A. (coastal plain from Virginia to northern Florida and west to Louisiana and E. Texas (fide Correll & Johnston, 1970)).

U.S.A. Alabama: no precise locality, August 1841 (fl), *Buckley* BM [FI, G, MO]); *Escambia Co., 10·2 km E. of East Brewton on US 29, 16 July 1977, *Webb & Ross* 53283 (TENN). Florida: Duval Co., near Jacksonville, September 188?, *Curtiss* 268 (BM, F*, FI*, G, GA*, K, MO*, NY*, P*, US*); Union Co., N. of L. Butler, 7 August 1961 (fr), *Gray* 10 (BM, GH*, US*). Georgia: Sumter Co., August 1897 (fl), *Harper* s.n. [? 4403] (BM); *Tattnail Co., *c.* 3·2 km S. of Glenville, 11 September 1972, *Godfrey* 72101 (TENN, US). Louisiana: Rapides Par., Alexandria, no date (fl), *Hale* s.n. (K, NY*); Covington, June–August 1832 (fl), *Drummond* 246 (BM, K). Mississippi: Pearl River Co., *c.* 1·7 km W. of Picayune, 31 August 1974 (fl), *Sargent* 10613 (BM); Smith Co., Taylorville, 21 August 1903 (fl), *Tracy* 8646 (BM, GH*, MO*, NY*, SMU*). North Carolina: *Carteret Co., *c.* 0·8 km SE. of co. road 1103, off N.C. 58, S. of Kuhns, 10 September 1966 (fr), *Bradley* 3489 (BM, NCU*, TENN*); *Hertford Co., E. of Como, Camp Company Forest, entrance to Camp P–D, 23 July 1949, *Fox & Godfrey* 2793 (GH, NY). South Carolina: Berkley Co., 22·4 km S. of Moncks Corners, 11 August 1939 (fl & fr), *Godfrey & Tryon* 1424 (GH, NY*, US*); Georgetown Co., 8 km S. of Andrews, 11 August 1939 (fl & fr), *Godfrey & Tryon* 1355 (GH, MO*, NY*, TENN*, US*). Virginia: *Brunswick Co., *c.* 2·3 km SE. of Triplett, 18 August 1942, *Lewis* s.n. (GH); *Sussex Co., *c.* 6·5 km NW. of Waverly, 10 September 1937, *Fernald & Long* 7532 (GH).

H. setosum is related to *H. denticulatum* subsp. *acutifolium* , being smaller, without basal branches, and setose or pilose on stem, leaves, and sepals. It is the only species in sects 29–30 with an indumentum. Its nearest relative in *H. denticulatum* appear to be the population of subsp. *acutifolum* from Alexander Co., N. Carolina (growing on granite outcrops) that Webb (1980) regarded as somewhat aberrant.

If *H. setosum* is indeed related to *H. denticulatum* subsp. *acutifolium*, then Webb's chromosome count (2n = 12) shows it to be haploid, or at least to have half as many chromosomes as its relative (2n = 24). How this halving has occurred is not at all clear; but I cannot agree with Webb that *H. setosum* has the most primitive chromosome number in *Hypericum*. 2n = 12 is clearly *not* a basic diploid number, otherwise the arborescent and shrubby species with 2n = 24 would have to be regarded as tetraploids and a sister group in some obscure way to *H. setosum* (and *H. cumulicola* q.v.).

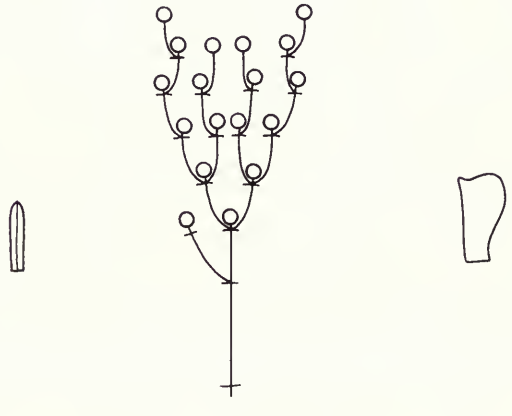
13. **Hypericum cumulicola** (Small) P. Adams in *Rhodora* **64**: 234 (1962); D. H. Webb, *Biosyst. Study Hypericum sect. Spachium in eastern N. Am.*: 169 (1980); Abrahamson et al. in *Fla Scient.* **47**: 221 (1984). Type: U.S.A., Florida, between Avon Park and Sebring, 30–31 August 1922, *Small* et al. s.n. (NY*-holotype).

Fig. 14B, Map 17.

Sanidophyllum cumulicola Small in *Bull. Torrey bot. Club* **51**: 391 (1924).
Hypericum gentianoides sensu Rodríguez Jiménez in *Mem. Soc. Cienc. nat. La Salle* **33**: 112 (1973), pro parte.

Icon: D. Ward in P. Pritchard, *Rare & endangered biota of Florida*: 34, f. 21 (1980).

Perennial herb 0·2–0·7(–0·75) m, erect, glabrous, with branches at or just below ground level, each unbranched below inflorescence. *Stems* green, 4-lined, rather sparsely gland-dotted; internodes (mature) 3–11 mm long, exceeding leaves. *Leaves* sessile, subulate, appressed (squamiform and spreading in juvenile stems); lamina (1–)2·5–4 × 0·2–0·3 mm,



linear-subulate, margin incurved, concolorous, not glaucous, subcoriaceous; apex acute, base parallel-sided, not decurrent, free; basal vein 1, unbranched; lamina glands in *c.* 2 lines, not prominent. *Inflorescence* up to *c.* 13-flowered, monochasial after 1st grade, sometimes with up to *c.* 9-flowered dichasial/monochasial or wholly monochasial branches from 1–2 lower nodes, without subsidiary flowering branches below, the whole subcorymbiform; pedicels 0·5–1 mm long: bracts 1–1·5 mm long, subulate. *Flowers c.* 3–4 mm in diam., stellate. *Sepals* 1·5–2 × 0·6–1 mm, unequal, ovate to elliptic or narrowly oblong, acute to subacute; veins 5, unbranched, all slightly prominent, midrib often apically indurated-cucullate; glands linear; margin irregularly ciliolate to entire. *Petals* yellow, 3·5–5 × 1·3–1·7 mm, *c.* 2·5 × sepals, obovate-oblong; apiculus subacute; glands linear, interrupted distally. *Stamens* 20–25, longest 1·5–2 mm long, *c.* 0·4 × petals. *Ovary c.* 2 × 0·5 mm, narrowly ovoid-pyramidal; styles 3, 1·5–2 mm long, 0·75–1 × ovary, spreading; stigmas capitate. *Capsule* (3·5–)4–6 × 1–1·5 mm, narrowly ovoid-conic, apex subrostrate, exceeding sepals. *Seeds* 0·5–0·6 mm long, not or scarcely carinate; testa scalariform-reticulate. 2n = 12 (Webb, 1980).

Scrub or ancient white-sand dunes; lowland.

South-eastern U.S.A. (Florida).

U.S.A. Florida: Polk Co., Frostproof, E. of Maintenance Station, L. Clinch, 30 September 1961 (fr), *Lakela* 24710 (BM, NY*, SMU*); Frostproof, path 630 connecting US 27 and US 27A, 23 August 1961 (fr), *Lakela* 24561 (BM, GH*); *Highlands Co., 48 km S. of Sebring along Rt. 27, 25 August 1951, *Webster* 4177 (GH, MICH, SMU). Highlands Co., *c.* 10·5 km S. of Fla. 70 and US 27, 1 August 1960, *Adams* 586 (GA*, GH, K, NY*, SMU, TENN*). De Sota Co., Avon Park to Sebring, 1 May 1919, *Small & De Winkeler* 9040 (K, MICH*, NY*).

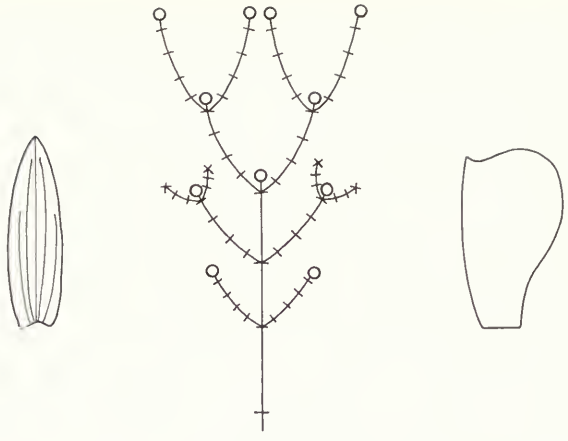
Webb followed Adams in comparing the highly reduced *H. cumulicola* with the equally reduced *H. gentianoides*, and Rodríguez Jiménez included it in that species. The habit and floral details of *H. cumulicola*, however, are not very like those of *H. gentianoides* (except possibly the conical capsule); they are much more similar to *H. setosum*, which has the same unusual chromosome number. Indeed the ciliola on the sepal margin of *H. cumulicola* can be interpreted as the last remains of the indumentum of *H. setosum*. Both species grow on sandy soils, but *H. cumulicola* inhabits drier areas than does *H. setosum*.

H. cumulicola occurs only in the white wind-deposited sands of the Central Florida range, from southern Highlands Co. north to the vicinity of Frostproof, Polk Co. Its very restricted habitat is under threat from 'the bulldozer and the citrus grove' (Ward, 1980: 34).

14. **Hypericum denudatum** A. St. Hil., *Fl. Bras. merid.* **1**: 336 (1828); Walp., *Repert. bot. syst.* **1**: 390 (1842); D. Dietr., *Syn. pl.* **4**: 1235 (1847); Lyman B. Smith in *J. Wash. Acad. Sci.* **48**: 314 (1958), pro parte quoad typum; Angely, *Fl. Anal. Paraná*: 450 (1965). Type: Brasil, Paraná, Campos Geraes, banks of torrent Yapo [Iapó] near cottage Barro do Yapo, February 1816–1821 (fl), *St.-Hilaire* 1530 (P!-holotype; F!, US!-photographs).

Map 18.

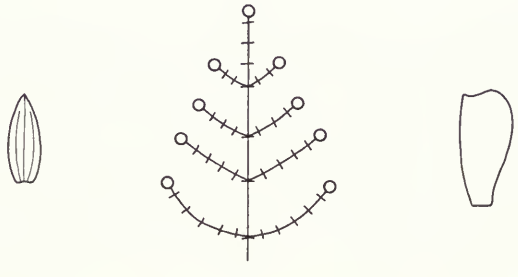
H. rigidum var. *humile* Reichardt in Martius, *Fl. bras.* **12**(1): 189 (1878). Types: as for *H. denudatum* A. St.-Hil. (obligate lectotype); Brazil, São Paulo, in pratis prope Mugi, *Riedel* (W?).



H. linoides sensu Reichardt in Martius, *Fl. bras.* **12**(1): 192 (1878), pro parte excl. typum, non A. St. Hil. (1828).

H. brasiliense var. *brasiliense* sensu Rodríguez Jiménez in Reitz, *Fl. Ill. Catar., Hipericác.*: 23 (1980), pro parte, non Choisy (1824).

Shrub or subshrub 0·3–1(1·5) m tall, erect to decumbent, branching at the base or usually 1-stemmed, with branches erect or divaricate-ascending, pseudo-dichotomous or lateral, numerous and often fastigiate, soon naked below. *Stems* dull red-brown, 4-lined and ancipitous when young, eventually terete, cortex exfoliating in strips; internodes 1–25 mm long, usually shorter than leaves. *Leaves* sessile, appressed to ascending; lamina 4–13(–18) × 0·8–3(–4) mm, narrowly elliptic-oblong to linear, plane, concolorous or almost so, not glaucous, subcoriaceous; apex acute to obtuse or sometimes rounded, base cuneate, not decurrent, free; basal or near-basal veins 5(3), midrib with 1–2 obscure pairs of branches, tertiary reticulum obscure or absent; laminar glands dense, visible above. *Inflorescence* 1(2–5)-flowered, dichasial/monochasial with lateral branches from up to 18 nodes below, the whole cylindric or fusiform; primary pedicels 1·5–3(–6) mm long; bracts and bracteoles linear-subulate. *Flowers* 10–16 mm in diam., stellate; buds ovoid-ellipsoid to narrowly ovoid, acute. *Sepals* 3–5·5 × 0·8–1·5 mm, subequal, not or scarcely imbricate, linear-lanceolate to narrowly lanceolate, acute; veins 5(3), only midrib sometimes prominent; glands wholly linear or punctiform near apex and margin. *Petals* yellow, 5–12 × 2–4·5 mm, 1·7–2·5 × sepals, oblanceolate; apiculus acute; glands mostly linear, distally punctiform. *Stamens* 30–50, obscurely (3–?) 5-fascicled, longest 3–6 mm long, 0·5–0·6 × petals. *Ovary* 1·5–2·5 × 1–1·5 mm, narrowly ellipsoid; styles 3–5, 1·5–3 mm long, 1–1·2 × ovary, outcurving; stigmas broadly capitate. *Capsule* 5–6·5 × 2·5–3(–4) mm, narrowly ovoid-pyramidal to ovoid, exceeding or rarely



equalling sepals. *Seeds* 0·6–0·7 mm long; testa ribbed-scalariform.

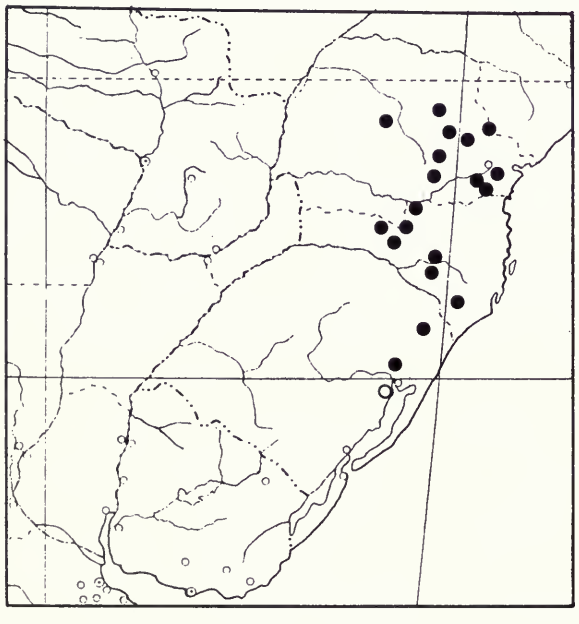
Wet meadows, marshes, and bogs (thickets in Rio Grande do Sul); 720–1200 m (lowland in Rio Grande do Sul?).

Brazil (Paraná to northern Rio Grande do Sul), Argentina (Misiones).

BRAZIL. Paraná: mun. Gal. Carneiro, Lageado, 12 February 1966 (fl & fr), *Hatschbach* 13732 (F, NY, P. U); Tres Barras, Rio Negro, *c.* 720 m, 25 January 1916 (fl), *Dusén* 17527 (BM, F, G, K, NY, S, US); Guajuvira, 22 November 1909 (fl & fr), *Dusén* 8937 (G, GH, MO, NY, S, Z). Santa Catarina: mun. Agua Doce, 22 km S. of Horizonte (Paraná), 2 December 1971 (fl), *Smith & Klein* 15596 (P, NY); mun. Curitibanos, 2–3 km W. of Curitibanos towards Campos Novos, *c.* 850 m, 9 February 1957 (fl & fr), *Smith & Klein* 11096 (NY); mun. Porto União, 42 km S. of Porto União, Matos Costa, *c.* 900–1100 m, 3 December 1964 (fl), *Smith & Klein* 10851 (NY, US). Rio Grande do Sul: Cai, 27 April 1949 (fl & fr), *Rambo* 41254 (K, NY, S); mun. Bom Jesus, Fazenda Bernardo Velho, 2 January 1947 (fl & fr), *Rambo* 34786 (F, S, US); prope San Leopoldo, Esteio, 20 November 1950 (fl), *Rambo* 49162 (NY, S).

H. denudatum resembles 16. *H. brasiliense* in having a relatively narrow capsule that nearly always exceeds the sepals. Its branching, however, is sometimes pseudodichotomous, whereas that of *H. brasiliense* is always lateral, the usually shorter leaves are ± concolorous and subcoriaceous, with only 3–5 basal veins that branch obscurely, if at all. The inflorescence is 1(2–5)-flowered (not 8–30-flowered), the stamens are fewer, the capsule usually narrowly ovoid-pyramidal (not cylindric), and the seeds somewhat longer.

H. denudatum has been misunderstood since Reichardt treated it as a prostrate variety of *H. rigidum*, which (in turn) he had wrongly associated with *H. cordiforme* (= *H. cordatum*). He also confused it with *H. linoides*. In fact it is quite distinct from these species and is easily recognizable by its short narrow leaves with 3–5 nerves and its small flowers, usually solitary, with narrow sepals and narrow capsules.



Map 18 Sect. 30: 14. *H. denudatum* ●; 15. *H. pedersenii* ○.

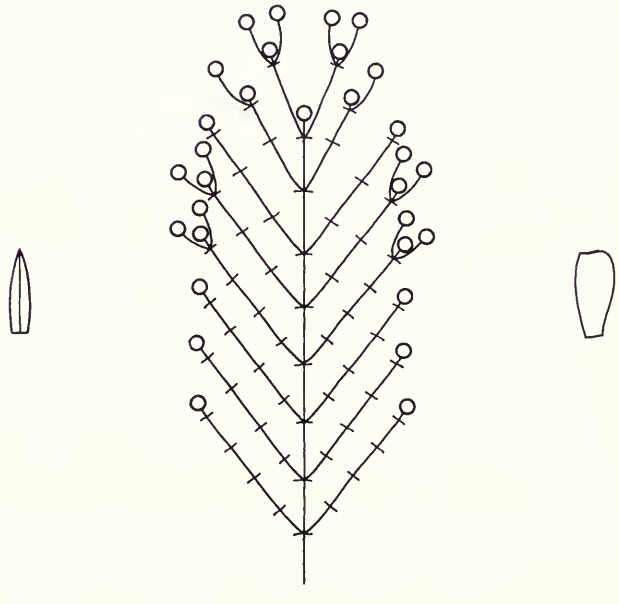
The most primitive form (erect with relatively few branches, larger leaves and flowers, and 5 styles) occurs in Paraná and adjacent Santa Catarina. From this there are two reduction trends: (i) northward, where the branching becomes more diffuse, the habit decumbent (or prostrate), the leaves and flowers much smaller, and the styles gradually reduced to 3; (ii) southward, where the stem remains erect but the more numerous fastigiate branches give the plant a broom-like appearance. Here, too, the leaves and flowers are reduced in size and the styles are occasionally reduced to 4 or 3. Although the extreme forms of these morphoclines look very different, the occurrence of a series of intermediates linking both to the primitive form precludes the recognition of infraspecific taxa.

15. **Hypericum pedersenii** N. Robson, **sp. nov.**

Map 18.

H. denudato A. St. Hil. affinis, sed habitu prostrato-adscendente, foliis minoribus acerosis incurvis glaucis 1-nervibus, floribus minoribus, differt. Type: Brazil, Rio Grande do Sul, mun. arroio dos Ratos, Faxinal, 10 November 1977 (fl), *Pedersen* 11972 (BM!-holotype).

Wiry shrublet up to *c.* 0·18 m tall, ascending from prostrate and diffusely branched base, not rooting, with branches erect or divaricate-ascending, lateral or rarely pseudodichotomous, numerous, soon naked below. *Stems* 4-lined and ancipitous when young, eventually terete, cortex exfoliating in strips; internodes 3–9·5 mm long, equalling or exceeding leaves. *Leaves* sessile, appressed; lamina 3–4 × 0·5–0·8 mm, acerose, incurved, concolorous, glaucous, subcoriaceous; apex acute, base subamplexicaul, not decurrent, free; basal vein 1, midrib unbranched; laminar glands rather dense, impressed beneath. *Inflorescence* 1–3-flowered, dichasial/monochasial with lateral branches from 12 or more nodes below, the whole narrowly pyramidal; primary pedicels 0·5–1 mm long; bracts and bracteoles linear-subulate. *Flowers* 8–9 mm in diam., stellate; buds ovoid, subacute. *Sepals* 2–2·5 × 0·5–1 mm, subequal, not imbricate, narrowly lanceolate, acute; veins 3, all or only midrib prominent; glands linear, punctiform in distal ¼. *Petals* apricot? yellow, *c.* 4·5 × 2 mm, 1·8–2·2 × sepals, oblong-oblanceolate; apiculus acute; glands



linear or mostly striiform. *Stamens* 30–35, obscurely 3-fascicled, longest 2·5 mm long, 0·55 × petals. *Ovary* 1·5 × *c.* 0·8 mm, narrowly ovoid; styles 3, 1·5 mm long, equalling ovary, outcurving; stigmas scarcely enlarged. *Capsule c.* 3 × 2 mm (?immature), narrowly ovoid-pyramidal. *Seeds* not seen.

Rocky ground.

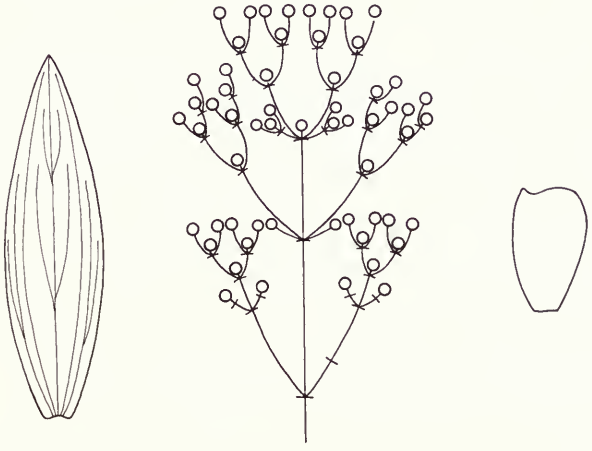
Brazil (Rio Grande do Sul).

BRAZIL. Rio Grande do Sul: mun. Arrois dos Ratos, Faxinal, 10 November 1977 (fl), *Pedersen* 11972 (BM).

H. pedersenii is clearly related to the diffusely branched, small-leaved, small-flowered form of *H. denudatum* from southern Paraná, but differs in the more extremely prostrate-ascending habit, the smaller incurved glaucous leaves with a single unbranched vein (midrib), and the smaller flowers. It has been collected only once.

16. **Hypericum brasiliense** Choisy in DC., *Prodr.* **1**: 547 (1824); A. St. Hil., *Fl. Bras. merid.* **1**: 335 (1828); Cham. & Schlechtendal in *Linnaea* **3**: 121 (1828) [amplified descr.]; D. Dietr., *Syn. pl.* **4**: 1235 (1847); Reichardt in Martius, *Fl. bras.* **12** (1): 193, t. 34 (1878); Arechav. in *An. Mus. Hist. nat. Montevideo* **3**: 110 (1898), pro parte quoad typum; R. Keller in *Bull. Herb. Boissier* **6**: 266 (1898), in op. cit. II, **8**: 181 (1908), in Engl. & Prantl, *Nat. Pflanzenfam.* 2nd ed. **21**: 183 (1925); Chodat & Hassler in *Bull. herb. Boissier* II, **3**: 1126 (1903); Lyman B. Smith in *J. Wash. Acad. Sci.* **48**: 313 (1958); Forster in *Contr. Gray Herb. Harv.* **184**: 131 (1958); Rodríguez Jiménez in *C. r. Soc. Biogéogr.* **432**: 191, map 6 (1972), in *Mems Soc. Cienc. nat. La Salle* **33**: 118, f. 15c (1973), in Reitz, *Fl. Ill. Catar., Hipericác.*: 23 (1980), pro parte. Type: Brazil, ad Rio-Janeiro, 1830 (fl & fr), *Gaudichaud* 1 (G!-neotype; P!-photograph). This specimen, which was cited as the type by Rodríguez Jiménez and is so labelled, cannot be the one on which Choisy based his description, as it is dated 1830. There is no specimen of *H. brasiliense* in Herb. De Candolle (G-DC) and none in the main Geneva herbarium (G) or in Paris (P) that could be the holotype. I therefore select *Gaudichaud* 1, which was annotated by Choisy, as the neotype.

Fig. 15D, Map 19.



Receveura graveolens Vell. Conc., *Fl. flumin.* : 237 (1825), **5**: t. 120 (1835), in *Archos Mus. nac. Rio de J.* **5**: 223 (1881). Type: Brazil, Rio de Janeiro (or Minas Geraes), *Vandelli* (LISU-holotype).

H. laxiusculum A. St. Hil., *Pl. usuell. bras.*: t. 62 (March 1828), *Fl. Bras. merid.* **1**: 332 (September 1828); Walp., *Repert. bot. syst.* **1**: 389 (1842); D. Dietr., *Syn. pl.* **4**: 1236 (1847); Reichardt in Martius, *Fl. bras.* **12**(1): 192 (1878); R. Keller in *Bull. Herb. Boissier* **6**: 267 (1898); Lyman B. Smith in *J. Wash. Acad. Sci.* **48**: 313 (1958); Angely, *Fl. Anal. Paraná*: 451 (1965), *Fl. Anal. S. Paulo* **1**: 186 (1969). Type: Brazil, São Paulo, Campos Geraes, Fazenda de Fortaleza, February [1820] 1816–1821 (fl & fr), *St.-Hilaire* 1457 ter (P!-lectotype – Rodríguez Jiménez, 1973); loc. cit., [1820] 1816–1821 (fl & fr), *St.-Hilaire* 1457, 1457a (P!-syntypes).

H. punctulatum A. St. Hil., *Fl. Bras. merid.* **1**: 334 (1828); Walp., *Repert. bot. syst.* **1**: 390 (1842); D. Dietr., *Syn. pl.* **4**: 1236 (1847). Type: Brazil, Minas Geraes, 'haud longo ab urbe Mantequeira', [1816?] October 1816–1821 (fr), *St.-Hilaire* 123 (P!-holotype).

H. brasiliense var. ß A. St. Hil., *Fl. Bras. merid.* **1**: 335 (1828).

H. brasiliense var. *angustifolium* Reichardt in Martius, *Fl. bras.* **12**(1): 193 (1878); Arechav. in *An. Mus. Hist. nat. Montevideo* **3**: 111 (1898), pro parte quoad typum; Chodat & Hassler in *Bull. Herb. Boissier* II, **3**: 1126 (1903), pro parte quoad typum. Type: Brazil, Minas Geraes, 'prope praediolum vulgo Caso do Bareto', [1817] October 1816–1821 (fl), *St.-Hilaire* 2158 (P!-holotype).

H. brasiliense var. *latifolium* Reichardt in Martius, *Fl. bras.* **12**(1): 193 (1878); Arechav. in *An. Mus. Hist. nat. Montevideo* **3**: 111 (1898), pro parte quoad typum; Lyman B. Smith in *J. Wash. Acad. Sci.* **48**: 313 (1958); Angely, *Fl. Anal. Paraná*: 450 (1965). Type as for *H. punctulatum*.

H. brasiliense var. *punctulatum* (A. St. Hil.) R. Keller in *Bull. Herb. Boissier* II, **3**: 1126 (1903), pro parte quoad typum.

H. stylosum Rusby in *Bull. N.Y. bot. Gdn.* **4**: 326 (1907); Foster in *Contr. Gray Herb. Harv.* **184**: 131 (1958). Type: Bolivia, Yungas, Coripati, 30 March 1894 (fl & fr), *Bang* 2107 (NY!-holotype; BM!, G!, GH!, K!, MICH!, MO!, US!, W!-isotypes).

H. bolivianum R. Keller in *Bull. Herb. Boissier* II, **8**: 189 (1908); Forster in *Contr. Gray Herb. Harv.* **184**: 131 (1958). Type as for *H. stylosum* (*Bang* 2107) (G?! or W?!-holotype; BM!, GH!, K!, MICH!, MO!, US!).

Sarothra brasiliensis (Choisy) Y. Kimura in Nakai & Honda, *Nova fl. jap.* **10**: 71, 238 (1951); Angely, *Fl. Anal. S. Paulo* **1**: 187 (1969).

Icon: Reichardt in Martius, *Fl. bras.* **12**(1): t. 34 (1878).

Subshrub (? or annual herb) 0·3–1 m tall, erect, 1-stemmed with branches divaricate-ascending, lateral, numerous, becoming naked below. *Stems* vinous ? red, 4-lined, and ancipitous when young, eventually terete, cortex exfoliating in strips; internodes (5–) 10–90 mm long, shorter to longer than leaves. *Leaves* sessile, spreading; lamina 8–30 × 2–7(–11) mm, narrowly elliptic to narrowly oblong or rarely lanceolate, plane, usually paler beneath, not glaucous, chartaceous; apex acute to rounded, base cuneate, not decurrent, free; basal or near-basal veins 3–9, midrid with 2–*c.* 9 pairs of branches, tertiary reticulum dense (usually obscure) or absent (?); laminar glands dense, not prominent. *Inflorescence c.* 9–17 (–24)-flowered, dischasial/monochasial, sometimes with short accessory branches from terminal node, with lateral branches from up to 8 nodes below, the whole narrowly cylindric to narrowly or broadly pyramidal; primary pedicels 2–6 mm long; bracts and bracteoles narrowly lanceolate to linear.

Flowers 10–15 mm in diam., stellate; buds narrowly ovoid, acute to rounded. *Sepals* 3·5–6 × 0·7–2 mm, subequal, basally imbricate, linear-lanceolate to ovate-lanceolate, acute; veins 5(3), all becoming prominent; glands linear. *Petals* yellow, 5–8 × 2–4·5 mm, 1·3–1·5 × sepals, narrowly obovate-oblong; apiculus acute; glands linear. *Stamens c.* 75, 5-fascicled, longest 3–4·5 mm long. *c.* 0·6 × petals. *Ovary* 1·5–2 × 0·8–1·1 mm, narrowly ellipsoid; styles 5 (or very rarely 4), 2–2·5 mm long, 1·2–1·35 × ovary, spreading-incurved; stigmas slightly enlarged to narrowly capitate. *Capsule* (5–)6 × (2·5–)3 mm, cylindric or rarely ovoid-cylindric, almost always exceeding sepals. *Seeds* 0·5–0·6 mm long; testa finely ribbed-scalariform. 2n = 24? (see p. 87).

Damp meadows, ditches, roadsides, and waste places; 300 (Santa Catarina) – 2525 (Espirito Santo) m.

Brazil (Bahia, Espirito Santo, and Minas Geraes to Santa Catarina), Paraguay (Amambay?), Bolivia (La Paz, Santa Cruz), Argentina (Corrientes, Chaco, Tucumán).

BRAZIL. Bahia: *c.* 5·5 km SE. of Barra do Choca on road to Itapetinga, 700–800 m, 30 March 1977 (fl & fr), *Harley* 20173 (BM, K). Espirito Santo: Pico de Bandeira, Serro Caparaó, *c.* 2525 m, 1 March 1959 (fl), *Irwin* 2751 (F, NY). Distr. Fed.: Brasilia, Zoobotânico, 16 February 1964 (fl & fr), *Heringer* 9947 (P). Minas Geraes: Ouro Preto, 930 m, 9 December 1921 (fl & fr), *E. & M. Holway* 1379 (US); *c.* 12 km SW. of Barão de Cocais, base of Serra de Caraça, *c.* 1500 m, 28 January 1971 (fl), *Irwin, Harley & Onishi* 29300 (C, F, H, K, NY); Maria da Fé, 31 August 1946 (fl), *Duarte* 258 (MO, NY). Rio de Janeiro: Serro Orgão, Guanabara, Edo. Rio de Janeiro Nat. Parque, 1860–1920 m, 16 December 1959 (fl & fr), *B. & C. Maguire* 44603 (NY); vicinity of Macieiras, Mt. Itatiaia, Estaçao Biologica, *c.* 2000 m, 10 December 1928 (fl), *L. B. Smith* 1462 (GH, US): mun. Petropolis, km 20 from Itaipava to Tereópolis, 24 February 1963 (fl & fr), *Pabst* 7309 (K). São Paulo: San Bernardo, December 1911 (fl), *Brade* 5258 (S); Campo de Jordão, 5–20 February 1937 (fl), *Porto* 2970 (NY, P); Villa Prudente, 20 December 1907 (fl & fr), *Usteri* s.n. (ZT). Paraná: San Cristovão, 18 October 1972 (fl), *Hatschbach* 30675 (BM, MBM, P); mun. Balsa Nova, San Luis de Puruña, 14 December 1979 (fl & fr), *Hatschbach* 42642 (BM, MBM); mun. Laranjeiras do Sul, 10 December 1968 (fl), *Hatschbach* 20597 (BM, MBM). Santa Catarina: mun. Chapecó, W. of Chapecó on road to Guatambu, 300–400 m, 15 October 1964 (fl), *Smith & Reitz* 12531 (NY).

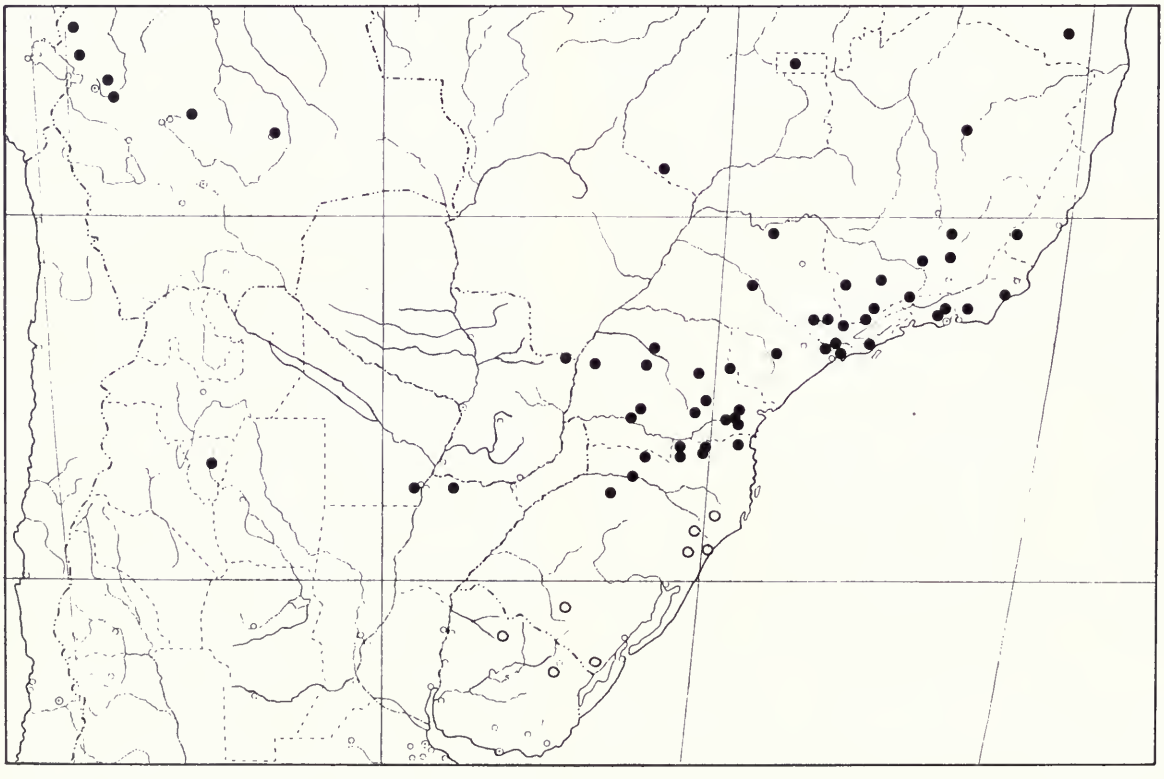
PARAGUAY. Anambay?: Sierra de Maracayu, prope Ipé hú, November 1898 (fl & fr), *Hassler* 5250 (A, BM, G, K, NY, P, S, W).

BOLIVIA. Santa Cruz: Florida, Samaipata, *c.* 2000 m, March 1911 (fl & fr), *Herzog* 1718 (S); Santa Cruz, 1500 m, 12 January 1864 (fr), *Pearce* s.n. (BM). La Paz: Nor Yungas, Polo-Polo bei Coroico, 1100 m, November 1912 (fl), *Buchtien* 244 (BM, G, GH, K, US); Inquisivi, Inquisivi 35 km hacia NW. via Circuata, 2300 m, 21 February 1981 (fl & fr), *Beck* 4555 (BM, UMSA n.v.).

ARGENTINA. Corrientes: Beron de Astrada, Arroyo Santa Isabel [al] boca del Paraná, 1 December 1945 (fr), *Ibarrola* 3965 (W); Chaco: Fontana, March 1933 (fr), *Meyer* 2097 (K). Tucumán: Tafí, Siombon, 20 November 1944 (fl & fr), *Obeo* 10 (NY).

H. brasiliense can be distinguished from all members of the *H. campestre* group (Spp. 18–24), with which it has been frequently confused, by the cylindric capsule that almost always exceeds the sepals. It is the only 5-styled suffruticose species with such a capsule. For differences between *H. brasiliense* and 14. *H. denudatum*, see p. 72.

Even though the exclusion of the *H. campestre* group

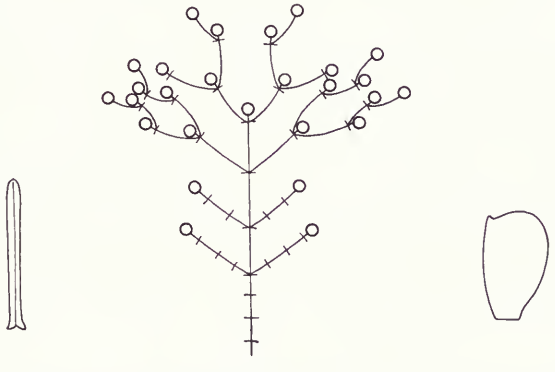


Map 19 Sect. 30: 16. *H. brasiliense* ●; 17. *H. polyanthemum* ○.

reveals it to be much less variable than has hitherto been thought, *H. brasiliense* still shows considerable variation. The plants that occur in the northern part of its range (Bahia to Minas Geraes and Rio de Janeiro) include those most similar to *H. campestre*, with 7–9 veined leaves, a narrow inflorescence, and narrow sepals that sometimes almost equal the capsule in length. From this form, two morpho-geographical trends are apparent: (i) Southward the narrow inflorescence persists into Paraná and western Santa Catarina, but the leaves and flowers become smaller and the sepals broader. This trend leads to 17. *H. polyanthemum*. (ii) The forms represented in trend (i) are apparently rare in São Paulo, where representatives of *H. brasiliense* tend to be more laxly branched and more numerous-flowered (*H. laxiusculum*). Such plants also occur in states adjacent to São Paulo, but they are characteristic of a western trend (Paraguay, northern Argentina, Bolivia) ('*H. stylosum*') in which the flowers become smaller and the leaves sometimes broader – but not with more numerous basal veins. Extreme forms of both these trends are linked to typical *H. brasiliense* by a series of intermediates, so that no infraspecific taxa can be recognized.

17. **Hypericum polyanthemum** Klotzsch ex Reichardt in Martius, *Fl. bras.* **12**(1): 189 (1878); Lyman B. Smith in *J. Wash. Acad. Sci.* **48**: 314 (1958); Angely, *Fl. Anal. Paraná*: 451 (1965). Type: Brazil, 'in Brasilia meridionali', n.d. (fl), *Sellow* 2898 (B†-holotype, F!, NY!-photographs; K!-isotype).

Map 19.



H. rivulare Arechav. in *An. Mus. Hist. nat. Montevideo* **3**: 109 (1898); Lyman B. Smith in *J. Wash. Acad. Sci.* **48**: 313, f. 1 j–l (1958). Type: Uruguay, 'Habita en orillas del arroyo Tambores, en las cercanias del valle Eden', n.d. (fl & fr), *Arechavaleta* 666 (MVM-holotype; US!-isotype (fragment); GH!, US!-photographs).

H. brasiliense sensu Rodríguez Jiménez in *Mems Soc. Cienc. nat. La Salle* **33**: 118 (1975), pro parte quoad spec. *Reitz & Klein* 7933, *Reitz* 1965, *Rambo* 51825, 51883; in Reitz, *Fl. Ill. Catar., Hipericác.*: 23 (1980), pro parte, quoad *Reitz & Klein* 7933.

H. brasiliense var. *linoides* sensu Rodríguez Jiménez in *Mems Soc. Cienc. nat. La Salle* **33**: 126 (1973), pro parte quoad spec. *Reitz* 1965, *Rambo* 51825, 51883.

Icon: Lyman B. Smith in *J. Wash. Acad. Sci.* **48**: 312 f. 1k–m (1958).

Subshrub 0·1–0·4 m tall, erect or decumbent, branches spreading or divaricate-ascending, lateral, near base or all along stem, very numerous, sometimes naked below. *Stems* yellow to orange-brown, sharply 4-lined, ancipitous when young, cortex exfoliating in strips; internodes 2–14(–35) mm long, the upper sometimes exceeding leaves. *Leaves* sessile, spreading; lamina 3–15 × 0·5–1·5(–2) mm, narrowly oblong to linear, margin revolute, paler beneath, not glaucous, chartaceous, apex obtuse to rounded, base parallel-sided or usually cordate-amplexicaul, not decurrent, free; basal vein 1, sometimes with obscure lateral branches, tertiary reticulum absent; laminar glands dense, ± prominent beneath. *Inflorescence* 3–16-flowered, dichasial/monochasial, with lateral branches from up to 3 nodes below, the whole narrowly cylindric; primary pedicels 0·5–3 mm long; bracts and bracteoles triangular-lanceolate to linear-subulate. *Flowers* 8–12 mm in diam., stellate or slightly obconic; buds ovoid, acute to subacute. *Sepals* 3·5–4·5(–5) × 1·2–2·4 mm, ± unequal, imbricate, the outer broadly rhombic-elliptic or ovate-lanceolate to ovate, the inner ovate-lanceolate to lanceolate or oblong, acute to obtuse, margin sometimes recurved; veins 5, only midrib becoming prominent; glands linear, distally punctiform. *Petals* yellow, tinged red outside, 5–7 × 2·5–4 mm, 1·5–1·7 × sepals, oblong; apiculus obtuse; glands striiform to punctiform. *Stamens c.* 40–50 (or more?), obscurely 3–5-fascicled, longest (2–)3–4 mm long, 0·5–0·7 × petals. *Ovary* 1·5–2 × 1 mm, ovoid; styles (3–)4–5, 1·5–2·5 mm long, 1–1·35 × ovary, spreading; stigmas slightly enlarged to distinctly capitate. *Capsule* 3·5–5 × 2–4 m, ovoid to subglobose, about equalling sepals. *Seeds* 0·6–0·7 mm long; testa finely ribbed-scalariform.

Grassland and other open, stony, medium-dry to rather wet ground; 10–1300 m.

Brazil (Santa Catarina, Rio Grande do Sul), Uruguay.

BRAZIL. Santa Catarina: Sombrio, 10 m, 9 October 1945 (fl), *Reitz* 1965 (S, US); Bom Jardin, São Joaquin, 1300 m, 15 December 1958 (fl), *Reitz & Klein* 7933 (G, US); Paca, Lagos de Caverá, 22 November 1950 (fl & fr), *Hans* 418 (P). Rio Grande do Sul: mun. Lavros do Sul, Coxilles de Tabuleiro, 9 November 1976 (fl & fr), *Pedersen* (BM, C); Passo da Guarda, prope Bom Jesus, 15 January 1952 (fl & fr), *Rambo* 51825 (S, US); Taimbé, prope Francesca de Paula, 21 February 1951 (fl & fr), *Rambo* 50128 (S).

URUGUAY. Tacuarembó: Arroyo, Tambores, [rec. 1925] (fl & fr), *Filippone* 5068 (K). Cerro Largo: Sierra Acequá, Huila, January 1926 (fl), *Herter* 18567 (GH-photograph).

H. polyanthemum is a southern derivative of *H. brasiliense*, sharing with the nearest form of that species the short leaves, narrow inflorescence, and broad sepals. It differs from *H. brasiliense* in the frequently decumbent, much-branched habit, the revolute, usually cordate-amplexicaul leaves, the broader ovary with styles sometimes reduced to 4 or even 3, and the ovoid to subglobose capsule that rarely exceeds the sepals.

18. **Hypericum campestre** Cham. & Schlechtendal in *Linnaea* **3**: 122 (1828); Walp., *Repert. bot. syst.* **1**: 388 (1842); D. Dietr., *Syn. pl.* **4**: 1236 (1847); Reichardt in Martius, *Fl. bras.* **12**(1): 192 (1878); Arechav. in *An. Mus. Hist. nat. Montevideo* **3**: 110 (1898), pro parte; R. Keller in *Bull. Herb. Boissier* **6**: 266 (1898), pro parte quoad typum, in op. cit. II, **8**: 181 (1908), in Engl. & Prantl, *Nat. Pflanzenfam.* II, **21**: 183 (1925); Malme in *Ark. Bot.* **23A**(4): 17 (1930); Herter, *Fl. illust. Urug.*: f. 2200 (1957); Lyman B. Smith in *J. Wash. Acad. Sci.* **48**: 313 (1958); Angely, *Fl. Anal. Paraná*: 450 (1965), *F. Anal. S. Paulo* **1**: 185 (1969); non

Moon, *Cat. pl. Ceylon*: 56 (1824), nomen (= *H. japonicum* Thunb. ex Murray). Type: Brazil, Paraná, 'ad fluvium Rio Negro aliisque pluribus locis', 1815–1817 (fl & fr), *Sellow* 1655 (B†-lectotype; F!, GH!-photographs; K!-isotype); *Sellow* 385 (B†-syntype); *Sellow* 4311 (B†-syntype).

Fig. 15A–C.

H. brasiliense sensu Chodat & Hassler in *Bull. Herb. Boissier* II, **3**: 1126 (1903), pro parte, quoad spec. cit.; Rodríguez Jiménez in *C. r. Soc. Biogéogr.* **432**: 91, map 6 (1972), pro parte, in *Mems Soc. Cienc. nat. La Salle* **33**: 118 (1973), in Reitz, *Fl. Ill. Catar., Hipericác.*: 23 (1980), pro parte et auct. plur.

Icon: Herter, *Fl. illust. Urug.*: f. 2200 (1957).

Subshrub to annual herb, 0·5–2 m tall, erect, 1-stemmed, with branches ascending to spreading or rarely strict, lateral, usually numerous, becoming naked below. *Stems* dull red to yellow-brown, 4-lined, ancipitous when young, eventually terete, cortex exfoliating in strips; internodes 10–60(–80) mm long, eventually longer than leaves. *Leaves* sessile, spreading; lamina 12–38 × 2–7(–10) mm, narrowly elliptic or rarely narrowly oblanceolate to linear, plane or margins recurved to revolute, paler beneath, not glaucous, chartaceous; apex acute to subacute or rarely obtuse, base cuneate to rarely rounded, not decurrent but sometimes forming shallow V, free; basal veins 3–5, midrib with 2–4 pairs of branches, tertiary reticulum obscure or absent (?); laminar glands dense, slightly prominent beneath. *Inflorescence* 1–>100-flowered, diachasial/monochasial, sometimes with accessory branches, with lateral branches from up to 6 nodes below, the whole narrowly cylindric to broadly and laxly pyramidal or rarely subcorymbiform (i.e. not flat-topped); primary pedicels 1–3(–5) mm long; bracts (rarely) foliar or narrowly lanceolate to linear, bracteoles linear. *Flowers* (8–)10–24 mm in diam., stellate; buds ovoid, acute. *Sepals* 4–6 × (0·7–)0·9–1·1(–1·4) mm, equal, not imbricate, linear-lanceolate, acute; veins 5(7), all becoming prominent; glands linear, distally sometimes striiform. *Petals* yellow, 5–12 × 2·5–5 mm, 1·65–1·75 × sepals, obovate-oblanceolate to oblanceolate-oblong; apiculus acute or obsolete; glands linear, distally punctiform. *Stamens* 65–85, 5-fascicled, longest 3–6 mm long, 0·4–0·6 × petals. *Ovary* 2–2·5 × 1–1·5 mm, ovoid; styles 5 (rarely 4–3), 2–3 mm long, 1–1·25 × ovary, spreading; stigmas narrowly capitate. *Capsule* (4–)5–6 × (3–)4 mm, ± broadly ovoid, shorter than or equalling sepals. *Seeds c.* 0·5 mm long; testa ribbed-scalariform.

Damp or shaded grassland, roadsides; 90–900 m.

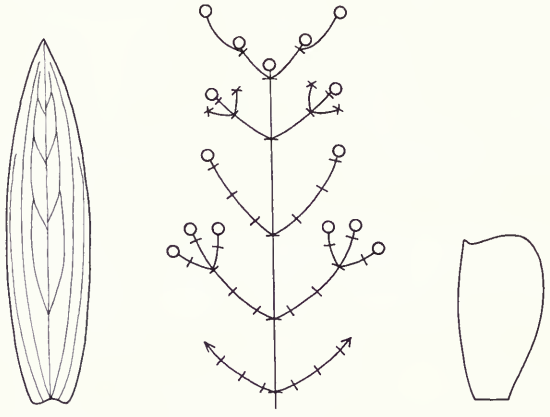
Brazil (São Paulo?, Paraná, Santa Catarina, Rio Grande do Sul), Paraguay, Argentina (Misiones, Corrientes, Chaco), Uruguay.

H. campestre has been much confused with *H. brasiliense* and *H. carinatum*. It can be distinguished from *H. brasiliense* by the narrow sepals that are never exceeded by the ± broadly ovoid capsule and from *H. carinatum* by the narrow leaves with bases not decurrent and the absence of red tinges from the petals. The longer leaves, broader capsule, and usually several- to many-flowered inflorescence differentiates *H. campestre* from *H. denudatum*.

Even with the exclusion of these species, *H. campestre* remains very variable. The most primitive form, with a few-flowered inflorescence and large flowers, occurs in Rio Grande do Sul (narrow leaves), Santa Catarina and Paraná (broad leaves). From the narrow-leaved form a reduction trend with few-flowered inflorescence leads to 19. *H. linoides* and 20. *H. salvadorense*, whereas from the broad-leaved form another reduction trend with an increase in flower number leads to 21. *H. lorentzianum* and its derivatives. The narrow-leaved form also gives rise to a many-flowered form, but with a very lax inflorescence. This variation can be accommodated in three subspecies, which are mostly easily separable.

18a. **Hypericum campestre** subsp. **pauciflorum** N. Robson, **subsp. nov.**

Fig. 15A, Map 20.



A subsp. *campestre* inflorescentiis terminalibus et lateralibus unifloribus vel paucifloribus differt. Type: Brazil, Paraná, mun. Quatro Barras, Rio Taquarí, 28 June 1982 (fl & fr), *Oliveira* 565 (BM!-holotype; MBM).

Plant suffruticose. *Leaves* 15–25(–32) × 2–7(–10) mm (1: b = (4·3)5–7·5), narrowly elliptic or very narrowly oblong to (usually) linear, usually plane. *Inflorescence* 1–5-flowered, cylindric to narrowly pyramidal, without accessory branches. *Flowers* 18–24 mm in diam., 5-styled.

Brazil (Paraná, Santa Catarina, Rio Grande do Sul).

BRAZIL. Paraná: Ponta Grossa, 1 February 1910 (fl), *Dusén* 9157 (BM, P, S, Z); mun. Lapa, Engenheiro Bay, 30 January 1949 (fl), *Hatschbach* 1185 (S, US); mun. S. J. Pinhaes, Col. S. Andrade, 3 February 1967 (fl), *Hatschbach* 15947 (US); 2 km E. of Cascavel along Hwy BR-277 to Curitiba, 670 m, 14 March 1976 (fl), *Davidse, Ramamoorthy & Vital* 11238 (BM, MO). Santa Catarina: mun. São Joaquin, Rio Lavatudo, *c.* 900 m, 15 December 1967 (fl), *Lourteig* 2210 (P). Rio Grande do Sul: Pinhae prope Santa Maria (oppid), 27 January 1902 (fl), *Malme* 1263 (S); without precise locality, 1833 (fr), *Gaudichaud* 1194 (P).

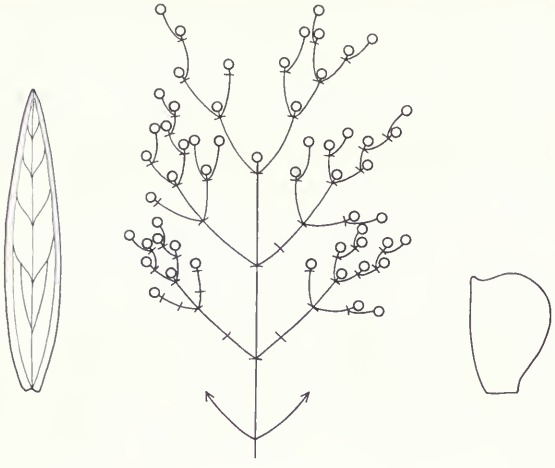
Subsp. *pauciflorum* usually has plane narrow leaves, but in *Dusén* 9157 and *Lourteig* 2210 they are relatively broad. *Schultz* 10141 is intermediate between subspp. *pauciflorum* and *tenue*.

18b. **Hypericum campestre** subsp. **campestre**.

Fig. 15B, Map 20.

Plant suffruticose to perennial. *Leaves* 20–30 × 3–7 mm (1: b = 4–10), narrowly elliptic to linear, usually plane. *Inflorescence c.* 12–65-flowered, broadly (or rarely narrowly) pyramidal to corymbiform, sometimes with accessory branches. *Flowers* 10–15(–20) mm in diam., 5-styled.

Fig. 15 A. *H. campestre* subsp. *pauciflorum*: (a) habit; (b) leaf; (c) sepal; (d) petal; (e) capsule. B. *H. campestre* subsp. *campestre*: (f) inflorescence. C. *H. campestre* subsp. *tenue*: (g) habit. D. *H. brasiliense*: (h) stem with leaf bases; (i) capsule (a, f, g × ½; b, h × 2; c–e, i × 4). A. *Dusén* 9157; B. *Hatschbach* 46016; C. *Fiebrig* 4895; D. *Harley* 20173.



Brazil (São Paulo?, Paraná, Rio Grande do Sul), Uruguay, Argentina (Misiones).

BRAZIL. São Paulo: to be confirmed. Paraná: mun. Pitanga, Arroio Grande, 14 January 1983 (fl & fr), *Hatschbach* 46016 (BM, MBM n.v.). Rio Grande do Sul: Passo do Socorro p. Vacaria, 26 November 1951 (fl), *Rambo* 51452 (S).

URUGUAY. Rivera: Cuñapira, 26 January 1977 (fl & fr), *Pedersen* 11624 (BM, C n.v.).

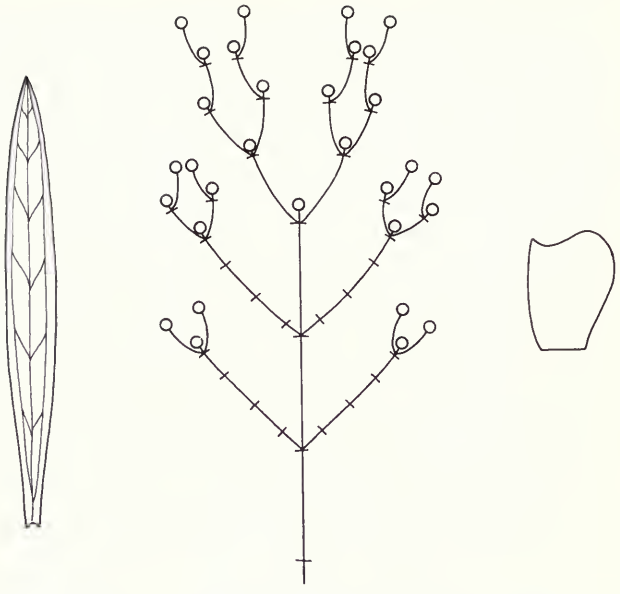
ARGENTINA. Misiones:depto Ldor. Gral. S. Martín, ao Garuhapé, ruta 12, 14 January 1972 (fr), *Mroginski, Fernandez & Quarín* 375 (ZT); San Javier, Arroyo Lorenzo, 31 December 1944 (fl & fr), *Schwarz* 3778 (W).

Subsp. *campestre* has not been recorded from Santa Catarina, but I have not yet been able to check all my records of *H. campestre* for it. There are some somewhat intermediate specimens between it and subsp. *pauciflorum* in Paraná.

18c. **Hypericum campestre** subsp. **tenue** N. Robson, **subsp. nov.**

Fig. 15C, Map 20.

A subsp. *campestre* foliis angustissimis, inflorescentia laxa ramulis tenuibus, differt. Type: Paraguay, zwischen Rio Apa und Rio Aquidaban, Villa Sena, 30 January 1909 (fl & fr), *Fiebrig* 4895 (BM!-holotype; G!, K!-isotypes).



H. brasiliense var. *angustifolium* sensu Chodat & Hassler in *Bull. Herb. Boissier* II, **3**: 1126 (1903), pro parte excl. *Hassler* 919, non Reichardt (1878).

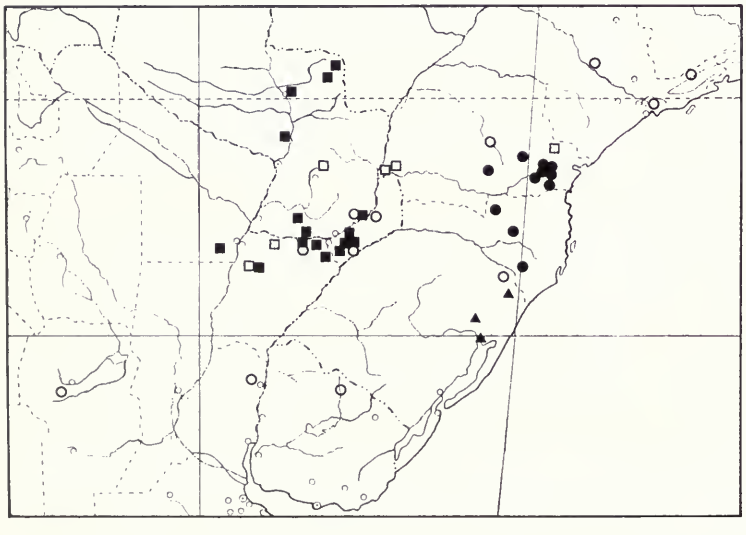
Plant annual. *Leaves* 15–35 × 1–3·5 mm (1: b = 10–15), linear, plane to revolute. *Inflorescence c.* 6–26-flowered, sometimes with accessory branches, lax, rather narrowly to broadly corymbiform. *Flowers* 8–14 mm in diam., (3)4–5-styled.

Paraguay (southern), Argentina (Misiones, Chaco).

PARAGUAY. Canendiyu: in region yerbalium de Maracayú, October 1898 (fl & fr), *Hassler* 4910 (BM, G, NY). Caaguazú: Caaguazú, 11 November 1874 (fr), *Balansa* 2620 (P). Misiones: San Ignacio, 1914 (fl & fr), *Chodat* s.n. (G).

ARGENTINA. Misiones: Candelaria, Santa Ana, 216 m, 9 November 1945 (fl & fr), *Montes* 1414 (BM, F, K); San Ignacio, Eldorado, 27 October 1949 (fl), *Schwindt* 2078 (K, NY, S). Chaco: depto Primo de Mayo, Colonia Benitez, 15 October 1959 (fl), *Schultz* 10141 (P).

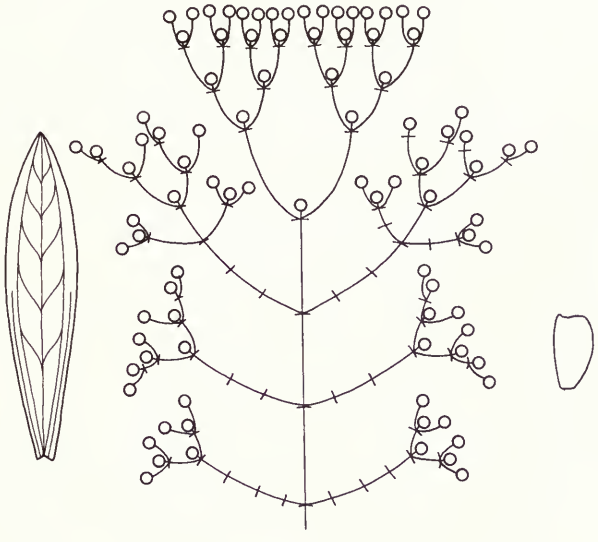
Subsp. *tenue* is recognizable by the annual habit, narrow leaves, and slender, lax inflorescence.



Map 20 Sect. 30: 18a. *H. campestre* subsp. *pauciflorum* ●; 18b. *H. campestre* subsp. *campestre* ○; 18c. *H. campestre* subsp. *tenue* ■; 18. *H. campestre* (not determined to subspecies) □; 20. *H. salvadorense* ▲.

19. **Hypericum linoides** A. St. Hil., *Fl. Bras. merid.* **1**: 333 (1828); Walp., *Repert. bot. syst.* **1**: 389 (1842); D. Dietr., *Syn. pl.* **4**: 1236 (1847); Reichardt in Martius, *Fl. bras.* **12**(1): 192 (1878), pro parte excl. loc. S. Paulo et spec. *Riedel* 1611 cit.; Arechav. in *An. Mus. Hist. nat. Montevideo* **3**: (1898), pro parte; R. Keller in *Bull. Herb. Boissier* II, **8**: 181 (1908), in Engl. & Prantl, *Nat. Pflanzenfam.* 2nd ed. **21**: 183 (1925); Herter, *Fl. illust. Urug.*: f. 2199 (1957); Lyman B. Smith in *J. Wash. Acad. Sci.* **48**: 313 (1958); Angely, *Fl. Anal. Paraná*: 451 (1965), *Fl. Anal. S. Paulo* **1**: 186 (1969). Type: Brazil, Rio Grande do Sul, 'Garapuita, in parte occidentali provinciae de S. Pedro do Sul', February [1821] 1816–1821 (fl), *St. Hilaire* 2575 (P!-holotype; F!, GH!-photographs).

Map 21.



H. brasiliense var. *linoides* (A. St. Hil.) Rodríguez Jiménez [in *C. r. Soc. Biogéogr.* **432**: 91, map 6 (1972), comb. invalid, sine basion.] in *Mems Soc. Cienc. nat. La Salle* **33**: 126 (1973), in Reitz, *Fl. Ill. Catar., Hipericác.*: 26 (1980), pro parte omnes.

H. campestre sensu Cabrera, *Fl. prov. Buenos Aires* **4**: 225, fig. 65 A (1965), pro parte excl. *Burkhart* 3653, non Cham. & Schlechendal (1828).

Icon: Herter, *Fl. illust. Urug.*: f. 2199 (1957).

Subshrub or annual herb 0·3–1 m tall, erect, 1-stemmed or rhizomatous, with branches strict or the lower ascending, lateral, usually numerous, sometimes becoming naked below. *Stems* yellow-brown, 4-lined, ancipitous when young, eventually terete, cortex exfoliating in strips; internodes 10–60 mm long, usually exceeding leaves. *Leaves* sessile, spreading; lamina 10–22 × 2–5(–7) mm, narrowly elliptic or narrowly oblong to lanceolate, plane or margins rarely recurved, paler beneath, not glaucous, chartaceous; apex subacute to rounded, base narrowly to broadly cuneate, not to distinctly decurrent (then pair forming rather deep V), free; basal veins 3(5) or 1 with 2 pairs of main ascending laterals, midrib obscurely branched, tertiary reticulum obscure or absent (?), laminar glands dense, obscure, not prominent. *Inflorescence* 3–*c.* 22 (–*c.* 40)-flowered, dichasial/monochasial, with lateral branches from up to 8 nodes below, the whole ± narrowly cylindric; primary pedicels 1–2(–3) mm long; bracts and bracteoles linear. *Flowers* 7–10(–12) mm in diam., stellate; buds ovoid, subacute to rounded. *Sepals* 3–5 × 0·8–1·2 mm, equal, not imbricate, linear-lanceolate to lanceolate or rarely ovate-lanceolate, acute; veins 5(7), all becoming prominent, glands linear. *Petals* golden yellow, 4·5–7 × 2–3 mm, 1·5–2 × sepals, oblanceolate-oblong; apiculus obtuse or obsolete; glands linear, distally interrupted to punctiform. *Stamens c.* 40–60(–85), 5-fascicled, longest 3–3·5 mm long, 0·5–0·65 × petals. *Ovary* 1·5–2 × 1–1·8 mm, ovoid to subglobose; styles 5(4), (1·5–)2–2·5 mm long, 1–1·25 × ovary, spreading; stigmas ± narrowly capitate. *Capsule* 3–4·5 × 2·5–3·5 mm, subglobose to globose, shorter than or equalling sepals. *Seeds c.* 0·5 mm long; testa ribbed-scalariform.

Damp places in grassland; 10–900 m.

Brazil (Rio Grande do Sul), Argentine (Buenos Aires), Uruguay.

BRAZIL. Rio Grande do Sul: Montenegro, Pareci Novo, 9 December 1948 (fl), *Henz* 33221 (W); Barreto Viano pr. São Leopoldo, 24 October 1949 (fl), *Rambo* 44093 (NY, S); Canela, 3 February 1948 (fl & fr), *Mattos & Babourian* RJ 63283 (NY, P).

ARGENTINA. Buenos Aires: banks and delta of rio de la Plata, *Burkhart* 4501 (SI), *Cabrera* 621 (LP), fide Cabrera in *Fl. Prov. Buenos Aires* (see above); see also *Fox* s.n. under Uruguay.

URUGUAY. Florida: La Palma, *c.* 100 m, November 1934 (fl), *Herter* 1728 (G, GH, MO, NY, US, Z). Flores: Rio Yi y A[rroy]o Carpinteria, 25 November 1936 (fl), *Rosengurtt* B-669 (US). ? or Argentina: mouth of Uruguay, Island of Martin Garcia, pre 1858 (fl & fr), *Fox* s.n. (BM).

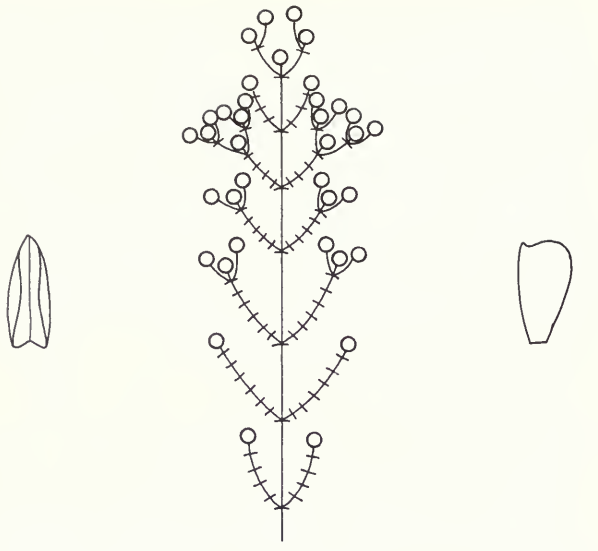
H. linoides is clearly derived from *H. campestre*; it continues the reduction trend in subsp. *pauciflorum*. Although it tends to be smaller in all parts than *H. campestre*, detailed comparison with that species reveals that all character measurements overlap in the two taxa except those of the ovary and capsule, which do provide a not completely satisfactory distinction. When *H. linoides* is compared with *H. campestre* subsp. *pauciflorum* only, however, there is a clear distinction in flower and fruit size, which, along with the distinct geographical areas, indicates that specific rank for *H. linoides* is appropriate.

20. **Hypericum salvadorense** N. Robson, **sp. nov.**

Map 20.

H. linoidei A. St. Hil. affinis, sed foliis minoribus crassioribus incurvis, floribus minoribus, sepalis exterioribus ovatis vel rhombico-ellipticus, oblongis, stylis plerumque 3, differt. Type: Brazil, Rio Grande do Sul, São Salvador, December 1941 (fl), *Leite* 734 (NY!-holotype), 2183 (G!-paratype).

Subshrub 0·15–0·6 m tall, erect, 1-stemmed, with branches erect, from ascending base, lateral, numerous, not naked below. *Stems* vinous red, 4-lined and ancipitous when young, eventually 2-lined; cortex exfoliating in strips; internodes 4–15(–20) mm long, exceeding leaves. *Leaves* sessile, appressed at first, eventually spreading; lamina 3–5 × 1–2 mm, oblong to narrowly triangular or hastate, margins incurved, concolorous, subcoriaceous; apex rounded-cucullate, base parallel-sided to rounded, decurrent-amplexicaul (pair forming shallow V), free; basal veins 1(3), unbranched; laminar glands ± dense, impressed. *Inflorescence* (2–)5–25-flowered, dichasial/monochasial, with lateral branches from up to 13 nodes

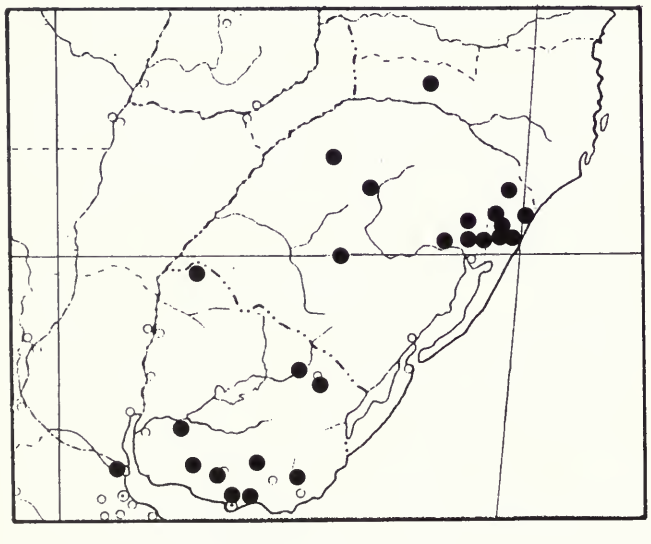


below, the whole very narrowly cylindric to subcorymbiform; primary pedicels 0·5–1 mm long; bracts and bracteoles oblong-linear, incurved. *Flowers* 7–9 mm in diam., stellate; buds ovoid, acute to obtuse. *Sepals* 1·5–3 × 0·7–1 mm, unequal, not or scarcely imbricate, outer ovate or rhombic-elliptic to oblong, inner narrowly oblong to oblanceolate, acute to obtuse, ± cucullate; veins 3–5, all becoming prominent; glands linear. *Petals* yellow, 4–5 × 1·5–2 mm, 2·5–3·5 × sepals, oblong; apiculus absent; glands linear, distally punctiform. *Stamens* 50–60, obscurely 5-fascicled, longest 2–2·5 mm long, *c.* 0·5 × petals. *Ovary c.* 1 × 0·4 mm, narrowly ovoid; styles 3(4), 1·5 mm long, *c.* 1·5 × ovary, ± spreading; stigmas markedly capitate. *Capsule* 3–4 × 2–3 mm, broadly ovoid to globose, exceeding sepals. *Seeds c.* 0·5 mm long; testa ribbed-scalariform.

Damp stony places; lowland.

Brazil (Rio Grande do Sul).

BRAZIL. Rio Grande do Sul: São Salvador, Montenegro, 30 May 1945 (fl & fr), *Friedrichs* 29721 (W); Vila Manresa, pr. Porto Alegre, 10 October 1950 (fl), *Rambo* 35800 (US); Bom Jesus, Fazenda Bernardo Velho, 1 January 1947 (fr), *Rambo* 34787 (S, US).



Map 21 Sect. 30: 19. *H. linoides.*

H. salvadorense differs from *H. linoides* in its smaller, thicker, incurved, broad-based leaves and smaller flowers with usually only 3 styles. The leaves, as well as the usually narrow inflorescence and broad sepals, distinguish it from 21. *H. lorentzianum*, which has similar fruits.

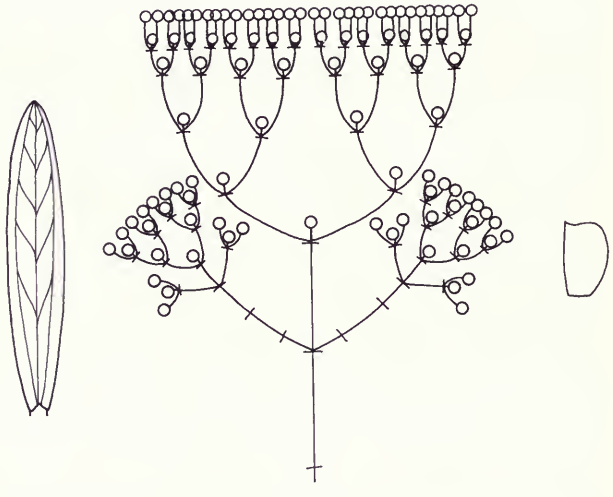
21. **Hypericum lorentzianum** Gilg ex R. Keller in *Bot.Jb.* **58**: 199 (1923), in Engl. & Prantl, *Nat. Pflanzenfam.* 2nd ed. **21**: 183 (1925); Lyman B. Smith in *J. Wash. Acad. Sci.* **48**: 313 (1958). Type: Brazil, Paraná, Rio Negro, n.d. (fl & fr), *Sellow* 4341 (B-holotype; F!, GH!, NY!-photographs; P!, S!-isotypes).

Fig. 16A, Map 22.

H. linoides sensu Griseb. in *Abh. K. Ges. Wiss. Gottingen* **24**: 40 (1879), pro parte quoad *Balansa* 2265, non A. St. Hil. (1828).

H. brasiliense var. *angustifolium* sensu Hassler & Chodat in *Bull. Herb. Boissier* II, **3**: 1126 (1903), pro parte quoad *Hassler* 919, non Reichardt (1878).

H. brasiliense sensu Rodríguez Jiménez in *Mems Soc. Cienc. nat. La Salle,* **33**: 118 (1973), pro parte, in Reitz, *Fl. Ill. Catar., Hipericác.*: 23 (1980), pro parte.



Subshrub 0·15–0·4(–1) m tall, erect, 1-stemmed, with branches ascending to spreading, lateral, numerous, sometimes becoming naked below. *Stems* reddish-brown, incompletely 4-lined, ancipitous when young, eventually terete, cortex exfoliating in strips; internodes 5–75 mm long, shorter than to exceeding leaves. *Leaves* sessile, spreading; lamina 7–20 × 1–3 mm, narrowly elliptic to oblong-linear or oblanceolate, plane to recurved, paler beneath, not glaucous, chartaceous; apex obtuse to rounded, base cuneate to parallel-sided, not decurrent, free; basal veins 1–3, midrib with 1–4 main pairs of branches, tertiary reticulum obscure or absent (?) laminar, glands dense, not prominent. *Inflorescence c.*7–*c.*80-flowered, dichasial/monochasial without accessory branches, with lateral branches from up to 7 nodes below, the whole obovoid to corymbiform, partial inflorescences densely subcorymbiform to corymbiform (i.e. flat-topped); primary pedicels 1·5–2·5 mm long; bracts and bracteoles oblong-linear to linear. *Flowers* 7–10 mm in diam., stellate; buds ovoid-ellipsoid, obtuse. *Sepals* 2·5–4 × 0·5–1·1 mm, subequal, imbricate, lanceolate or narrowly oblong to narrowly elliptic, acute; veins 5, inner 3 becoming prominent; glands all linear or sometimes distally punctiform. *Petals* yellow, 4–5 × 2–3 mm,

Fig. 16 A. *H. lorentzianum*: (a) habit; (b) leaf; (c) sepal; (d) petal; (e) young capsule with old outer floral parts (partly cut away). B. *H. myrianthum* subsp. *myrianthum*: (f) habit; (g) leaf; (h) sepal; (i) petal; (j) capsule with old outer floral parts (partly cut away), C. *H. myrianthum* subsp. *tamariscinum*: (k) leaf; (l) inflorescence; (m) sepal (a, f, l × ½; b × 3; c, d, h, i, m × 15; e, g, j, k × 8). A. *Ibarrola* 2294; B. *Ibarrola* 1334; C. *Bartlett* 20900.

c. 1·6–2 × sepals, oblong-elliptic, apiculus very short or obsolete; glands interrupted-linear to punctiform. *Stamens* 40–50, obscurely 5-fascicled or irregular, longest 2–3 mm long, *c.* 0·5–0·6 × petals. *Ovary* 1–1·5 × 0·8–1 mm, broadly ovoid to subglobose; styles (5)4(3), 1·6–2 mm long, 1·3–2 × ovary, spreading; stigmas narrowly capitate to scarcely enlarged. *Capsule* 2·5–4 × 2–3 mm, broadly ovoid to globose, shorter than or equalling sepals. *Seeds c.* 0·5 mm long; testa ribbed-scalariform.

Shaded grasslands, woodland margins; 20–1400 m.

Brazil (Paraná, Santa Catarina, Rio Grande do Sul), Paraguay, Argentina (Salta, Misiones, Corrientes), Uruguay.

BRAZIL. Paraná: 15 km N of Curitiba, near Tamandaré, Parque S. María, 10 January 1967 (fl & fr), *Lindeman & de Haas* 4007 (K, U). Santa Catarina: São Joaquin, Bom Jardin, Serro do Oratorio, 1400 m, 12 January 1959 (fl & fr), *Reitz & Klein* 8127 (NY, S, US); mun. Abelardo Luz, 8–9 km N. of Abelardo Luz, 8 December 1964 (fr), *Smith & Klein* 13884 (K). Rio Grande do Sul: Vila Manresa, pr. Porto Alegre, 3 March 1950 (fl & fr), *Rambo* 46073 (K, MO, NY); Morro Sapucaia, 29 January 1948 (fl & fr), *Palacios-Cuezzo* 498 (K); Chacoeira, 5 January 1902 (fl & fr), *Malme* It. Regn. II 975 (S).

PARAGUAY. Concepción: prope Concepción, September 1901 (fl & fr), *Hassler* 7394 (BM, C, G, GH, K, MICH, MO, NY, P, S, W). Canendiyu: Cordillera de Altos, 12 November 1902 (fr), *Fiebrig* 427 (BM, F, GH, K). Guairá: Villarrica, October 1931 (fr), *Jorgensen* 4518 (C, F, GH, MO, NY, S). Nuevo Asunción: prope Fort Lopez, 1885–1895 (fl), *Hassler* 919 (K, P).

ARGENTINA. Salta: Camino del Alto (Salta-Jujuy), 29 January 1947 (fr), *O'Donell* 4393 (F, S, W). Misiones: San Pedro, Alegria, km. 367, 26 March 1945 (fl & fr), *Bertoni* 1008 (A, NY); San Ignacio, Menrichio (?), 20 m, 10 January 1941 (fl), *Schwartz* 5375 (G). Corrientes: Monte Casero, 2 November 1945 (fl & fr), *Ibarrola* 2294 (A, NY); San Miguel, Carandaytý, 16 September 1982 (fl), *Pedersen* 13405 (BM, C n.v.); Santo Tomé, Chacra Santa Marta, 8 km N. of Colonia Garabi, 12 December 1984 (fl), *Tressens* et al. 2782 (G).

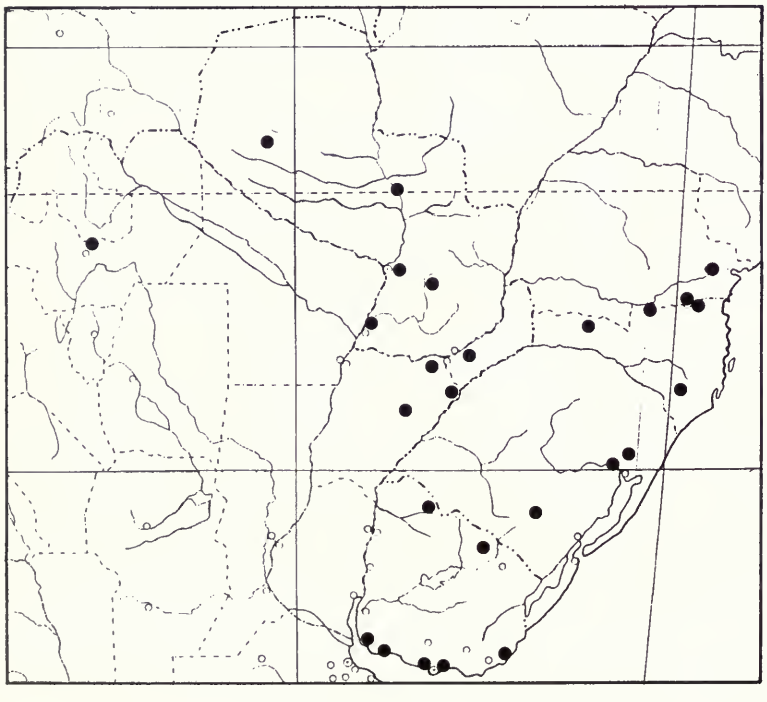
URUGUAY. Artigas: Arroyo Sepilturno, 22 February 1954 (fr), *Zorrón* 674 (US). Canelones: Atlantida, 14 December 1919 (fl & fr), *Osten* 15271 (S). Montevideo: Montevideo, n.d. (fl), *Gilbert* 1133 (K, P, W). Rocha: Rocha, 15 January 1956 (fl), *Zorrón* 1250 (US).

H. lorentzianum is a morphological link between *H. campestre* subsp. *campestre* and *H. myrianthum,* having smaller leaves, smaller flowers, and a more condensed (often ± flat-topped) inflorescence than the former and larger flowers and a less condensed inflorescence than the latter. Extreme morphological reduction occurs in Uruguay, but such plants are not likely to be confused with *H. myrianthum* because the flowers are larger and the habit dwarfer than in that species.

22. **Hypericum myrianthum** Cham. & Schlechtendal in *Linnaea* **3**: 123 (April 1828); Walp., *Repert. bot. syst.* **1**: 388 (1842); D. Dietr., *Syn. pl.* **4**: 1236 (1847); Reichardt in Martius, *Fl. bras.* **12**(1): 187, t. 33, fig. 1 (1878); Arechav. in *An. Mus. Hist. nat. Montevideo* **3**: 107 (1898); R. Keller in *Bull. Herb. Boissier* II, **8**: 179 (1908), in Engl. & Prantl, *Nat Pflanzenfam.* 2nd ed. **21**: 181 (1925); Malme in *Ark. Bot.* **23A**(4): 16 (1930); Lyman B. Smith in *J. Wash. Acad. Sci.* **48**: 314 (1958); Rodríguez Jiménez in Reitz, *Fl. Ill. Catar., Hipericác*: 9 (1980). Type: Brazil, Rio Grande do Sul?, 'in campis pratisque provinciarum meridionalium Brasiliae, Montevideo, etc., ad fluvium Rio Negro, alibique frequentem', 18 – (fr), *Sellow* 3343? (B-holotype; G!, K!, S!).

Sarothra myriantha (Cham. & Schlechtendal) Y. Kimura in Nakai & Honda, *Nova fl. jap.* **10**: 233 (1951).

Subshrub 0·2–1 m tall, erect, 1-stemmed, with branches ascending, lateral, numerous, becoming naked below. *Stems* reddish-brown, 4-lined and ancipitous when young, soon incompletely 4-lined to 2-lined, eventually terete, cortex exfoliating in strips; internodes 3–40 mm, equalling or



Map 22 Sect. 30: 21. *H. lorentzianum.*

exceeding leaves. *Leaves* sessile, spreading to suberect; lamina 2–10 × 0·7–1·5 mm, lanceolate or oblong or elliptic-oblong to linear or oblanceolate, plane or subrecurved to incurved, paler beneath or concolorous or slightly glaucous, chartaceous; apex obtuse to rounded, base cuneate to rounded or cordate-amplexicaul, not decurrent, free; vein 1, unbranched; laminar glands dense, not prominent. *Inflorescence c.* 30–200-flowered, dichasial/monochasial without accessory branches, with lateral branches from up to 8 nodes below, ± densely corymbiform (flat-topped), the whole ± narrowly cylindric to obconic; primary pedicels 0·5–1 mm long; bracts and bracteoles triangular-lanceolate to oblong or ovate. *Flowers* 2–4 mm in diam., stellate; buds ellipsoid-globose to globose, rounded. *Sepals* 0·7–2 × 0·3–1 mm, ± unequal, not imbricate, narrowly oblong to broadly elliptic-ovate, subacute to rounded; veins 3–5, becoming prominent or not; glands all linear or distally punctiform. *Petals* yellow to orange, 1·3–3·5 × 0·7–2 mm, 1·7–2·5 × sepals, oblong-elliptic to elliptic, apex inrolled (at least when dry); apiculus obsolete or absent; glands linear. *Stamens* 10–30, 3(–4?)-fascicled or irregular (?), longest 1·2–3 mm long, 0·7–0·9 × petals. *Ovary* 0·5–0·7 × 0·3 mm, ovoid; styles 3–4, 0·8–1·4 mm long, 1·5–2·2 × ovary, spreading; stigmas subcapitate to narrowly capitate. *Capsule c.* 2–3 × 2–3 mm, subglobose-trigonous to globose, equalling or exceeding sepals. *Seeds c.* 0·8 mm long; testa ribbed-scalariform.

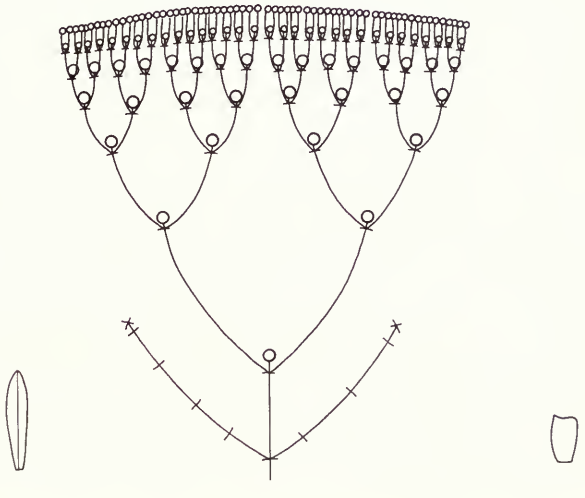
Dry, sandy, or stony habitats; lowland to 700 m.

Brazil (Rio Grande do Sul), Argentina (Misiones, Corrientes, Entre Rios), Uruguay.

Previous authors have nearly all recognized *H. myrianthum* and *H. tamariscinum* (*parviflorum*, *pelleterianum*, *notiale*) as distinct species, although L. B. Smith (*in herb. adnot.*) remarked that they seemed to intergrade. In fact this group seems to form a miniature *Rassenkreis* with the most primitive and the most advanced forms in Rio Grande do Sul. All Argentinian material belongs to *H. myrianthum* sensu stricto; but there are a few intermediate specimens from Uruguay, where most plants belong to *H. tamariscinum*. In view of the small zone of morphological overlap, the most appropriate rank for the two taxa would seem to be subspecies.

22a. **Hypericum myrianthum** subsp. **myrianthum**

Fig. 16B, Map 23.



Icons: Reichardt in Martius, *Fl. bras.* **12**(1): t. 33 f. I (1878).

Habit relatively lax. *Stem* narrowly ancipitous above. *Leaves* spreading; lamina plane or subrecurved, base cuneate to parallel-sided. *Inflorescence c.* 15–150-flowered, relatively lax. *Sepals* narrowly oblong or narrowly elliptic, veins scarcely prominent in flower.

Brazil, Argentina, Uruguay.

BRAZIL. Rio Grande do Sul: Passo do Ricardo, Rio Piratini, 4 November 1961 (fl), *Pereira* 6762 (P); 25 km from Santo Angelo, 2 November 1971 (fl), *Lindeman* et al. ICN 9023 (U).

ARGENTINA. Misiones: Candelaria, Garupá, 15 October 1945 (fl), *Bertoni* 2212 (F, S, W); Apostoles, Río Chinusay, 9 November 1944 (fl), *Ibarrola* 1149 (BM, S). Corrientes: Santo Tomé, Casa Pava, 19 November 1944 (fl), *Ibarrola* 1334 (NY, S); Monte Caseros, Libertad, costa Arroyo Curuzú, 22 February 1945 (fr), *Ibarrola* 2479 (A, S). Entre Rios: Concepción del Uruguay, May 1877 (fl), *Lorentz* 158 (BM, G, GB, K, S, Z).

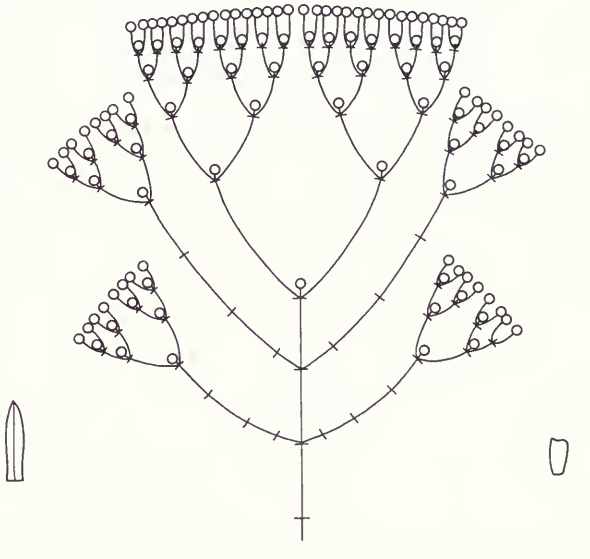
URUGUAY. Rivera: Cerro Blanco, 27 January 1958 (fl), *Rosengurtt* B-6989 (US); Cuñapiru, 180–210 m, 1928 (fl), Wright s.n. (BM). Cerro Largo: Río Negro, April 1867 (fl & fr), *Arechavaleta* 223 (ZT).

All Uruguayan specimens are intermediate in some characters, e.g. they may have incurved leaves or many-flowered condensed inflorescences or small, relatively broad sepals.

Two collections by Glaziou (*G.* 11803, 18912), allegedly from Minas Geraes, would appear to be further examples of erroneous localization on this collectors' labels (see Wurdack, 1970).

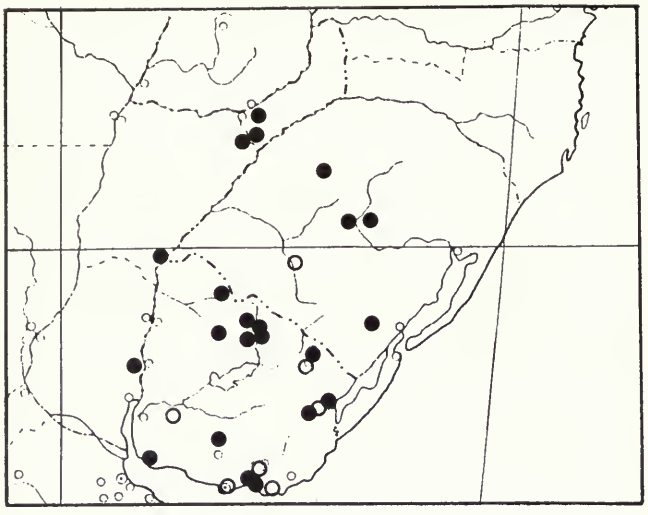
22b. **Hypericum myrianthum** subsp. **tamariscinum** (Cham. & Schlechtendal) N. Robson, **stat. nov.**

Fig. 16C, Map 23.

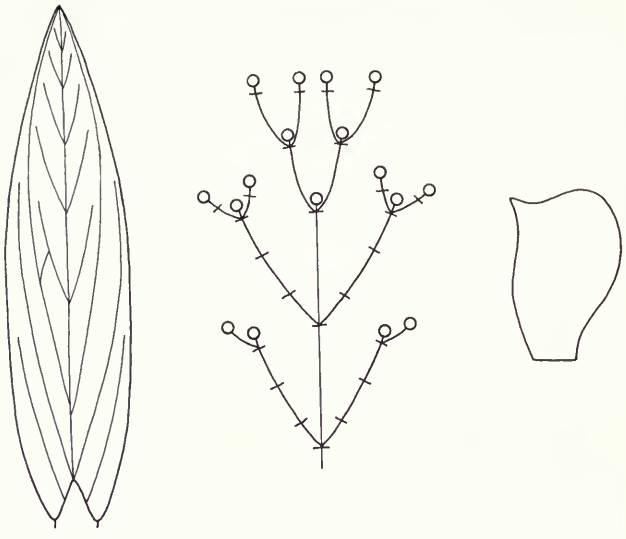


H. tamariscinum Cham. & Schlechtendal in *Linnaea* **3**: 124 (April 1829); Walp., *Repert. bot. syst.* **1**: 389 (1842); D. Dietr., *Syn. pl.* **4**: 1236 (1847). Type: Uruguay, Montevideo, 1815–1817 (fl), *Sellow* 617 (B†-holotype; BM!, K!, S!, W!).

H. parviflorum A. St. Hil., *Fl. Bras. merid.* **1**: 333 (September 1828); Walp., *Repert. bot. syst.* **1**: 390 (1842); D. Dietr., *Syn. pl.* **4**: 1236 (1847) [sphalm. 'parvifolium'];



Map 23 Sect. 30: 22a. *H. myrianthum* subsp. *myrianthum* ●; 22b. *H. myrianthum* subsp. *tamariscinum* ○.



Reichardt in Martius, *Fl. bras.* **12**(1): 188 (1878); non *H. parviflorum* Salisb. (1796) nec Willd. (1802). Type: Brasil, Rio Grande do Sul, 'ad ripas amnis Ibicuy, in provinciae Missionum', February [1821] 1816–1821 (fl), *St. Hilaire* 2621 (P!-holotype & isotypes; F!, G!, GH!, NY!-photographs).

H. pelleterianum A. St. Hil., *Fl. Bras. merid.* **1**: 334, t. 70 (September 1828); Walp., *Repert. bot. syst.* **1**: 390 (1842); D. Dietr., *Syn. pl.* **4**: 1236 (1847); Reichardt in Martius, *Fl. bras.* **12**(1): 187 (1878); Arechav. in *An. Mus. Hist. nat. Montevideo* **3**: 107 (1898); R. Keller in *Bull. Herb. Boissier* II, **8**: 179 (1908). in Engl. & Prantl, *Nat. Pflanzenfam.* 2nd ed. **21**: 181 (1925), sphalm. '*pelletorianum*'; Herter in *Fl. illust. Urug.* **13a**: 569, fig. 2194 (1957); Lyman B. Smith in *J. Wash. Acad. Sci.* **48**: 314 (1958); Angely, *Fl. Anal. Paraná*: 451 (1965). Type: Uruguay, Montevideo, 'in lapidosis montis Pan de Assucar', [1820] 1816–1821 (fl), *St.-Hilaire* 2133 (P!-holotype; US!-photograph).

H. pelleterianum var. *tamariscinum* (Cham. & Schlechtendal) Arechav. in *An. Mus. Hist. nat. Montevideo* **3**: 107 (1898).

H. brigittae Herter in *Fl. illust. Urug.* **13a**: 569, fig. 2195 (1957), nom. nud., ex fig.

H. notiale Lyman B. Smith in *J. Wash. Acad. Sci.* **48**: 324 (1958). Type as for *H. parviflorum* A. St. Hil., non Willd.

Habit often condensed. *Stem* broadly ancipitous above. *Leaves* ascending to erect; lamina incurved, base parallel-sided to cordate-amplexicaul. *Inflorescence c.* 40–200-flowered, relatively dense. *Sepals* broadly oblong to broadly elliptic or elliptic-ovate, veins prominent in flower.

Brazil (Rio Grande do Sul), Uruguay.

BRAZIL. Rio Grande do Sul: rio Ibicuy, February [1821] 1816–1821 (fl), *St.-Hilaire* 2621 (P).

URUGUAY. Cerro Largo: Sierra de Ríos, 28 November 1909 (fl), *Berro* 5730 (US). Lavalleja: Cerro Grande, between Salus and Minas, 27 November 1943 (fl), *Bartlett* 20900 (F, GH, MICH, NY). Maldonado: Maldonado, June 1870 (fl), *Arechavaleta* 855 (ZT). Montevideo: see respective types of *H. tamariscinum* and *H. pelleterianum*. Soriano: Balza al Norte, 25 December 1913 (fl), *Berro* 7084 (US).

23. **Hypericum carinatum** Griseb., *Symb. fl. argent.*: 41 (1879); R. Keller in *Bull. Herb. Boissier* II, **8**: 18 (1908) attrib. R. Keller, in Engl. & Prantl, *Nat. Pflanzenfam.* 2nd ed. **21**: 183 (1925); Lyman B. Smith in *J. Wash. Acad. Sci.* **48**: 314 (1958). Type: Argentina, Córdoba, Sierra Achala, N. Cuesta de Copina, 22 February 1877 (fr), *Hieronymus* 881 (GOET-holotype; P!-photograph).

Map 24.

H. brasiliense sensu Arechav. in *An. Mus. Hist. nat. Montevideo* **3**: 110 (1898), pro parte; Rodríguez Jiménez in *C. r. Soc. Biogéogr.* **432**: 91, map 6 (1972), pro parte, in *Mems Soc. Cienc. nat. La Salle* **33**: 118 (1973), pro parte; non Choisy (1824).

H. brasiliense var. *punctulatum* (A. St. Hil.) R. Keller in *Bull. Herb. Boissier* II, **3**: 1126 (1903), pro parte excl. typum.

H. paraguense R. Keller in *Bull. Herb. Boissier* II, **8**: 181 (1908) in clav., in Engl. & Prantl, *Nat. Pflanzenfam.* 2nd ed. **21**: 183 (1925); Lyman B. Smith in *J. Wash. Acad. Sci.* **48**: 314 (1958). Type: Paraguay, not stated. From Keller's key the type is an annual herb with oblong obtuse leaves, a subglobose capsule, and styles about as long as the capsule, a description that can apply only to *H. carinatum*. No specimen in Geneva (G) agreeing with this description has been annotated as *H. paraguense* by Keller; indeed most of them have been annotated by him as *H. brasiliense* var. *punctulatum*. Of the remaining collections utilized by Keller in writing his 1908 paper, all except those at Berlin (B) and Brussels (BR) have been searched by me without success; and according to Bamps (in litt., 1988), there is no specimen labelled *H. paraguense* by Keller in Brussels. If the type was in Berlin, it probably no longer exists. It seems likely however, that Keller was giving specific rank to a taxon based on the specimens that he had wrongly included in *H. brasiliense* var. *punctulatum* in 1903. Of the three collections cited in that paper, I select the only one to agree fully with Keller's key: Paraguay, Concepción, prope Concepción, September 1901 (fl & fr), *Hassler* 7395 (G!-lectotype).

H. altissimum R. Keller in *Bot. Jb.* **58**: 199 (1923); Lyman B. Smith in *J. Wash. Acad. Sci.* **48**: 313 (1958). Type: Paraguay, S. Izabel, in campo sicco juxta fluvii Paraguay, prope Ascuncion, 17 September 1893 (fl), *Lindman* in *Iter*

Regnell. I 2061 (B†-holotype, F!, P!-photographs; GH!, S!-isotypes).

H. megapotamicum Malme in *Arch. Bot., Stockholm* **23A**, No. 4: 17 (1930); Lyman B. Smith in *J. Wash. Acad. Sci.* **48**: 313 (1958); Angely in *Fl. Anal. Paraná*: 451 (1965). Types: Brazil, Rio Grande do Sul, Povo Novo prope Pelotas, 12 November 1901 (fl), *Malme* 410 (S!-syntype); Canõas pr. Porto Alegre, 30 November 1901 (fl), *Malme* 665 (S!-syntype).

H. campestre sensu Cabrera, *Fl. prov. Buenos Aires* **4**: 227 (1965), pro parte, quoad *Burkhart* 3653.

Subshrub or annual (?) herb (0·2–)0·3–0·7(–2) m tall, erect, 1-stemmed or branching at the base, with lateral branches erect or ascending, ± numerous or absent, not usually naked below. *Stems* red-brown to green, persistently 4-lined, ancipitous when young, cortex persistent (always); internodes 15–65 mm long, shorter to longer than leaves. *Leaves* sessile, suberect or spreading; lamina 15–45(–50) × 5–15 mm, narrowly oblong or elliptic-oblong to ovate-lanceolate or oblanceolate, margin plane or usually basally to wholly recurved, paler beneath, not glaucous, chartaceous; apex acute to rounded, base cuneate to cordate, decurrent-amplexicaul, forming ± deep V, free; basal or near-basal veins 3–5, midrib with numerous to 2 pairs of branches, tertiary reticulum dense, sometimes obscure; laminar glands dense to rather sparse, obscure, not prominent. *Inflorescence* 1–7(–17)-flowered, dichasial/monochasial, without accessory branches, with lateral branches from up to 8 nodes below, the whole narrowly cylindric to narrowly (or rarely broadly) pyramidal; primary pedicels 1·5–4 mm long; bracts and bracteoles linear-lanceolate to linear-oblong. *Flowers* (12–)15–25 mm in diam., stellate; buds ellipsoid, subacute. *Sepals* 5–11 × 1–2(–2·7) mm, equal, scarcely imbricate, linear-lanceolate to lanceolate, acute to subacuminate; veins 3–7, only midrib or sometimes all becoming prominent; glands linear. *Petals* yellow to orange, 7–16 × 3·5–6 mm, *c.* 1·4 × sepals, oblanceolate or oblong-oblanceolate to obovate; apiculus acute; glands linear, distally striiform to punctiform. *Stamens* 70–80, obscurely 5-fascicled, longest 3·5–5·5 mm long, 0·35–0·5 × petals. *Ovary* 2–3 × 1·5–2 mm, broadly ovoid; styles 5(4), 2·5–3 mm long, 1–1·25 × ovary, spreading; stigmas clavate to narrow. *Capsule* 4·5–6 × 4–5·5 mm, broadly ovoid to subglobose, shorter than or equalling sepals. *Seeds c.* 0·5 mm long; testa ribbed-scalariform.

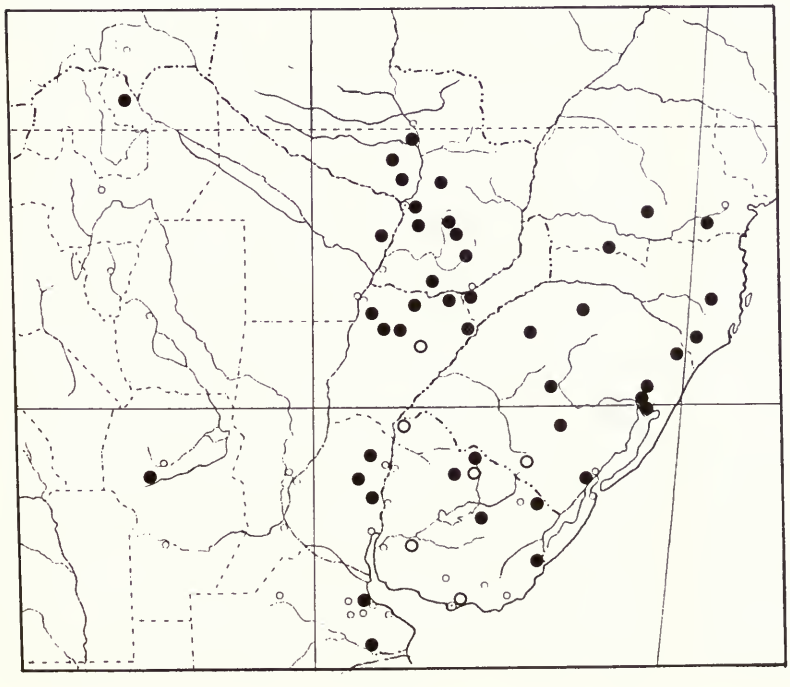
Damp or shaded grassland or stony places; 100–1900 m.

Brazil (Paraná, Santa Catarina, Rio Grande do Sul), Paraguay, Argentina (Salta, Formosa, Misiones, Corrientes, Entre Ríos, Buenos Aires, Córdoba), Uruguay.

BRAZIL. Paraná: Mariopolis, arredores, 26 February 1982 (fl), *Kumrow* 1824 (BM); mun. Guarapuava, Fda. Campo Real, 7 Februry 1969 (fl & fr), *Hatschbach* 21020 (MO). Santa Catarina: mun. Lajes, Morro de Pinhiero Seco, 900 m, 3 February 1963 (fl), *Reitz* 6636 (US); Serra de Boa Vista, São José, 800 m, 27 December 1960 (fl), *Reitz & Klein* 10627 (G, K, Z). Rio Grande do Sul: Santa María (oppidum), 25 January 1902 (fl & fr), *Malme* 1233 (S); Estación Parecí, 14 January 1949 (fr), *Rambo* 31798 (C, W).

PARAGUAY. Caaguazú: prope Caaguazú, February 1905 (fl & fr), *Hassler* 9019 (BM, G). Central: Trinidad, proper Asunción, October 1916 (fl & fr), *Rojas* 1775 (S [GH, US-photographs]). Concepción: proper Concepción, September 1901 (fl & fr), *Hassler* 7395 (G). Guairá: Villarrica, 20 August 1874 (fr), *Balansa* 2266 (K, GP). Misiones: Santiago, Estancia 'La Soledad', 19 October 1959 (fl & fr), *Pedersen* 5154 (C). San Pedro: Piribebuy, Valenzuela, 1914 (fl), *Chodat* s.n. (G).

ARGENTINA. Salta: Toldos, bei Bermejo, 1900 m, 26 November 1903, *Fiebrig* 2892 (A). Formosa: el campo Guaycolec, 1919 (fr), (collector?) 3288 (GH). Misiones: Dep. Capital, Ruta 12, ayo. Zaimán, 20 September 1969, *Krapovickas, Cristóbal & Maruñak* 15422 (WIS). Corrientes: Beron de Astrada, Santa Isabel, 11 May 1945 (fr), *Huidrobo* 2102 (BM, NY, S); Concepción, Estancia 'Fortín del Ibera', 31 January 1968 (fl & fr), *Pedersen* 8754 (C, GH). Entre Ríos: Concordia, San Carlos, 12 December 1946 (fl), *Meyer* 10960 (S, W); Villaguay, Jubileo, 29 October 1961 (fl), *Pedersen* 6337 (A, C). Buenos Aires: Capital Federal, 1 February 1931



Map 24 Sect. 30: 23. *H. carinatum* ●; 24. *H. anceps* ○.

(fl), *Burkhart* 3653 (K). Córdoba: dept. Punilla, Río Yuspe, frante a El Durazno, 1400 m, 15 December 1949 (fr), *Meyer & Sleumer* 15643 (W); Villa Garcia, Tauti, 15 December 1909 (fl), *Stuckert* 20571 (G).

URUGUAY. Cerro Largo: Sierra de Ríos, 100–150 m, February 1937 (fl & fr), *Herter* 2000 (F). Rivera: Cerros del Gobierno, 10 December 1907 (fl), *Berro* 4864 (K, US). Rocha: 25 km N. Castillos, 22 January 1944 (fl & fr), *Bartlett* 21378 (GH, NY).

H. carinatum is related to *H. campestre* subsp. *campestre*, a few specimens from Paraguay (e.g. *Rojas* 8609a (K)) and Brazil, Paraná (e.g. *Kummrow* 1824) being somewhat intermediate. Usually, however, the markedly decurrent leaf base and relatively broad leaves suffice to distinguish *H. carinatum* from all other species of the *H. brasiliense* affinity except *H. anceps*.

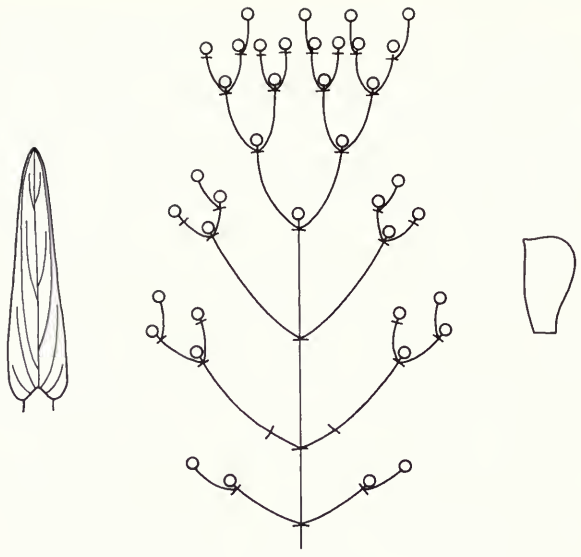
The Paraguay/Paraná area is also the one whence the two main trends in *H. carinatum* diverge. In one (*H. carinatum* sensu stricto), the internodes remain short, the leaves narrow, and the inflorescence short (1–5 fertile nodes) and pyramidal; in the other (*H. altissimum, H. megapotamicum, H. paraguense*?), the internodes become elongated, the leaves broad, and the inflorescence long (to 8 nodes) and cylindric. Although both forms may occur in the same area (e.g. Rio Grande do Sul), they are linked elsewhere by intermediates that prevent the recognition of infraspecific taxa. At the southern extreme of the first trend are Uruguayan and Argentinian plants with smaller flowers and leaves and a more diffuse habit, which I have distinguished as *H. anceps* Larrañaga. Towards the western extreme of the same trend, in Paraguay, are plants which, except for the 5-styled ovary and subglobose fruit, are similar to *H. silenoides*.

24. **Hypericum anceps** Larrañaga in *Publnes Inst. Geogr. Uruguay* **2**: 239 (1923); Lyman B. Smith in *J. Wash. Acad. Sci.* **48**: 314 (1958). Type: Uruguay, not known. According to Dr C. Diego Legrand (cited by L. B. Smith, 1958: 314), no herbarium specimens of Larrañaga's types now exist and none may ever have existed. The description of *H. anceps* is too brief for precise identification, but it does suggest this relative of *H. carinatum*, as does Larrañaga's choice of epithet. As this species would otherwise require to be described as new, I have associated the name *H. anceps* Larrañaga with it and, as neotype, designate the following specimen: Uruguay, no precise locality or date (fl), *Arechavaleta* 570 (US!-neotype, MVM; GH!, US!-photographs).

Map 24.

Hypericum brasiliense sensu Rodríguez Jiménez in *Mems Soc. cienc. nat. La Salle* **33**: (1973), pro parte, quoad syn. *H. anceps* Larrañaga.

Subshrub? or annual herb 0·2–0·6(–1) m tall, erect or decumbent, 1-stemmed, with lateral branches all along stem, erect to ascending, becoming naked below. *Stems* green, persistently 4-lined, markedly ancipitous when young, the median (subfoliar) lines always wider than the laterals, cortex deciduous in strips or flakes; internodes 4–40 mm long, mostly longer than leaves. *Leaves* sessile ± spreading; lamina 12–17(–25) × 2–3(–5·5) mm, narrowly oblong to narrowly lanceolate, margin recurved, paler or glaucous beneath, chartaceous; apex subacute to rounded, base rounded to cordate, decurrent-amplexicaul, forming shallow V, free;



basal or near-basal veins 3–5, midrib with 1–2 pairs of branches, tertiary reticulum dense, obscure; laminar glands dense, often obscure, not prominent. *Inflorescence* 15–*c.* 50-flowered, dichasial/monochasial, without accessory branches, with lateral branches from up to 8 nodes below, the whole narrowly to broadly cylindric or narrowly pyramidal; primary pedicels 2–4·5 mm long; bracts and bracteoles lanceolate. *Flowers* 8–10 mm in diam., stellate; buds ovoid-ellipsoid, subacute. *Sepals* 3–5 × 1–2 mm, subequal or unequal, scarcely to definitely imbricate, lanceolate to ovate-elliptic, acute; veins 5–7, only midrib or central 3 becoming prominent; glands linear. *Petals* golden yellow, tinged red in bud, 5–6 × 2–2·5 mm, 1·5–2 × sepals, oblong-oblanceolate; apiculus subacute; glands linear. *Stamens* 40–50, obscurely 5-fascicled, longest 2·5–3·5 mm long, 0·45–0·5 × petals. *Ovary c.* 1·5 × 1·5 mm, globose; styles 5(4), 2–2·5 mm long, 1·3–1·7 × ovary, spreading; stigmas narrowly capitate or clavate. *Capsule* 3–4(–5) × 3–4, subglobose to globose, shorter than or equalling sepals. *Seeds c.* 0·6 mm long; testa ribbed-scalariform.

Bogs or damp or shaded grassland or stony places; lowland.

Brazil (Rio Grande do Sul?), Argentina (Corrientes), Uruguay.

BRAZIL. Rio Grande do Sul?: 'on Brough (?) Bogga, at the foot of Jophula (?) Mir (?)', pre 1867 (fl & fr), *Tweedie* 454 (K).

ARGENTINA. Corrientes: dep. San Martin, 8 km al N. de Carlos Pellegrini, Ruta 14, 30 October 1971 (fl), *Krapovickas* et al. 20155 (ZT).

URUGUAY. Artigas: Cuareim, 30 May 1905 (fr), *Berro* 1811 (US). Montevideo, June 1870 (fl & fr), *Arechavaleta* 388 (ZT); ibid., December 1876 (fl & fr), *Arechavaleta* 3434A (ZT; GH-photograph), ad ripas ammis dicto El Pando, January 1872 (fl), *Gibert* 981 (K). Río Negro: Paso del Puerto, *c.* Arroyo Grande Grande, 21 November 1970 (fl), *Lourteig* 2485 (NY, P). Rivera: Cerro del Gobierno, 10 December 1907 (fl), *Berro* 4864A (K).

Although clearly the end of a reduction trend from *H. carinatum, H. anceps* is apparently separated from that species by a morphological gap, differing in its more branched, often decumbent habit, smaller and narrower

leaves, and smaller flowers and fruits. The presence of red tinges in young parts (e.g. on stem lines and on sepals and petals in bud) may also be diagnostic.

The area of *H. anceps* is almost wholly within that of *H. carinatum*, but these species appear to remain quite distinct. Indeed, the Kew sheet of *Berro* 4864 (Uruguay, Rivera, Cerro del Gobierno) has both species on it. The most similar form of *H. carinatum* is in Depto. Córdoba (*Stuckert* 2057 and 21129, from Tauti), but this may be a case of parallel reduction rather than of consanguinity.

25. **Hypericum silenoides** Juss. in *Annls Mus. Hist. nat. Paris* **3**: 162, t. 16 f. 3 (1804); Poiret in Lam., *Encycl.* Suppl. **3**: 669 (1813); Choisy, *Prodr. monogr. Hypéric.*: 51 (1821), in DC., *Prodr.* **1**: 550 (1824); Kunth in Humb., Bonpl. & Kunth, *Nova gen. sp.* **5**: 191 (1822); Sprengel, *Syst. veg.* **3**: 343 (1826); D. Dietr., *Syn. pl.* **4**: 1237 (1847); Trevir., *Hyper. sp. animadv.*: 10 (1861); Rodríguez Jiménez in *C. r. Soc. Biogéogr.* **432**: 91, map 2 (1972), pro parte, in *Mems Soc. Cienc. nat. La Salle* **33**: 51 (1973), pro parte, uterque quoad typum. Type: Peru, [Lima], n.d. (fl & fr), *Dombey* (P-JUS-holotype; F!-photograph; F!-fragment, P!-isotypes).

H. tarquense Kunth in Humb., Bonpl. & Kunth, *Nova gen. sp.* **5**: 193 (1822); Choisy in DC., *Prodr.* **1**: 550 (1824); D. Dietr., *Syn. pl.* **4**: 1237 (1847); Jameson, *Syn. fl. aequat.* **1**: 109 (1865). Type: Ecuador, Pichincha, Quito, Valle de Tarqui, 3120 m, May 1802 (fl & fr), *Humboldt & Bonpland* s.n. (P-HUM-holotype; P!-isotype; F!-photograph).

H. indecorum Kunth in Humb., Bonpl. & Kunth, *Nova gen. sp.* **5**: 193 (1822); Choisy in DC., *Prodr.* **1**: 550 (1824); D. Dietr., *Syn. pl.* **4**: 1237 (1847); Jameson, *Syn. pl. aequat.* **1**: 109 (1865). Type: Ecuador, Loja, 'prope Loxam Quitensium', 1908 m, August 1802 (fl & fr), *Humboldt & Bonpland* s.n. (P-HUM!-holotype; P!-isotype; F!-photograph).

H. multiflorum Kunth in Humb., Bonpl. & Kunth, *Nov. gen. sp.* **5**: 194 (1822). Type: Ecuador, Loja, 'in Monte Saraguru prope Loxam', 2520 m, August 1802 (fl & fr), *Humboldt & Bonpland* s.n. (P-HUM!-holotype; P!-isotype; F!-photograph).

H. uliginosum var. *multiflorum* (Kunth) Choisy in DC., *Prodr.* **1**: 547 (1824).

H. dichotomum Philippi, *Fl. atacam.*: 12 (1860); Reiche in *An. Univ. Chile* **93**: 562 (1896), *Fl. Chile* **1**: 270 (1896); non *H. dichotomum* Lam. (1797) nec D. Don (1825) nec Zum. (1860) nec R. Keller (1908). Type: Chile, *Antofagasta*, 'prope Paposo, Miguel Diaz etc. crescit', n.d. (fl & fr), *Philippi* s.n. (B†-holotype; F!, G!, NY!, US!-photographs; W!-isotype).

H. bonariense Griseb., *Symb. fl. argent.*: 41 (1879); R. Keller in *Bull. Herb. Boissier* II, **8**: 180 (1908); Lyman B. Smith in *J. Wash. Acad. Sci.* **48**: 314 (1958). Type: Argentina, Tucumán, Cuesta de Garabatal, Sierra de Tucumán, January 1874 (fr), *Hieronymus & Lorentz* 871 (GOET-holotype; F!, G!, K!, US!-isotypes; P!-photograph).

H. thesiifolium var. *latifolium* Hieron. in *Bot. Jb.* **20**, Beibl. 49: 52 (1895). Type: Colombia, Cauca, prope Chapa, 1600–1900 m, February 1884 (fl & fr), *Lehmann* 3602 (B†-holotype; BM!, F!, K!, P!, US!-isotypes).

H. uliginosum var. *scabriusculum* R. Keller in *Bull. Herb. Boissier* II, **8**: 191 (1908). Type: Peru, without precise locality, *Herb. Pavon* (?). The type has not been found, but this variety must be either a narrow-leaved form of *H. silenoides* or, less likely, of *H. brevistylum*.

H. paposum I. M. Johnston in *Contr. Gray. Herb. Harv.* **85**: 76 (1929). Type as for *H. dichotomum* Philippi non Lam., etc.

H. thesiifolium sensu Foster in *Contr. Gray Herb. Harv.* **184**: 131 (1958).

Perennial or annual herb 0·1–0·6 m tall, erect or sometimes decumbent and rooting, usually branching at the base, with lateral branches ascending, ± numerous or absent, often naked below. *Stems* green to vinous red, persistently 4-lined, ancipitous when young, cortex deciduous in strips or persistent; internodes 2–35(–60) mm long, all but uppermost usually shorter than leaves. *Leaves* sessile, erect or more usually spreading; lamina 6–26 × 1–6(–9) mm, lanceolate or linear-lanceolate to elliptic or narrowly oblong or rarely linear, margin ± recurved or more rarely plane, paler beneath, not glaucous, thinly chartaceous; apex acute to rounded, base cuneate to rounded, decurrent-amplexicaul or rarely semi-amplexicaul, usually forming ± shallow V, free; basal or near-basal veins (3)5–7(9), midrib sometimes with 1–2 pairs of main laterals and pinnately branched above, tertiary reticulum dense, evident; laminar glands dense but small and obscure, not prominent. *Inflorescence* (1–)5–*c.* 16-flowered, dichasial/monochasial, without accessory branches, usually with lateral branches from up to 6 nodes below, the whole narrowly ellipsoid to corymbiform; primary pedicels 2–17 mm long; bracts and bracteoles linear-lanceolate to linear-oblong. *Flowers* (5–)9–14(–16) mm in diam., stellate; buds ellipsoid, acute to rounded. *Sepals* 2–6 × 0·7–1·5 mm, subequal to unequal, imbricate, linear-lanceolate to narrowly oblong, acute to obtuse; veins (3–)5, only midrib becoming prominent; glands linear, distally often punctiform. *Petals* chrome yellow to orange-yellow, tinged or veined red outside, (2·5–)4–8 × (0·7–)1–2(–2·5) mm, 1·25–1·35 × sepals, oblong-oblanceolate to oblong; apiculus obtuse; glands linear. *Stamens* (9–)14–32, 3-fascicled or irregular, longest 2–5 mm long, 0·5–0·8 × petals. *Ovary* 0·8–2 × *c.* 0·5–1·7 mm, narrowly ovoid-ellipsoid to narrowly ovoid-pyramidal; styles 3 (or very rarely 4–5), 0·7–2 mm long, 0·5–1 × ovary, spreading-ascending; stigmas broadly capitate. *Capsule* (3–)4·5–8 × (1–)2–3·5 mm ± narrowly ovoid-cylindric or more rarely cylindric-ellipsoid or cylindric, 1·3–2 × sepals. *Seeds c.* 0·5 mm long; testa finely ribbed-scalariform. 2n = 24 (?) (Huyhn (1965) for '*H.* aff. *paniculatum*' from Peru, which could be only *H. silenoides* unless *H. brasiliense* has crossed the border from Bolivia).

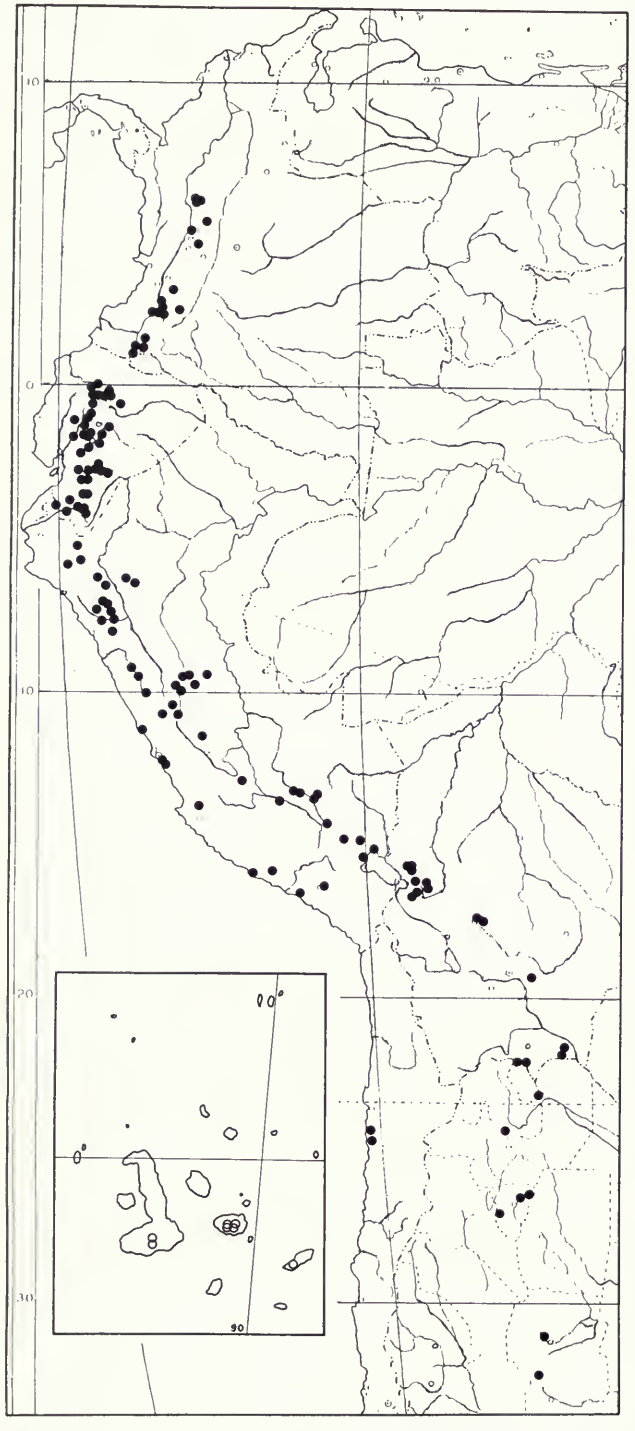
Open grassy, sandy or rocky areas, dry or wet but well-drained; 0–850 m (Chile to Peru coastal), 900–3900 m (Ecuador, Colombia, Peru upland, Bolivia, Argentina), 600–945 m (Galapagos Islands).

Chile (Antofagasta), Peru (Arequipa to Lima, Cajamarca and Piura to Cuzco), Ecuador, Colombia (Nariño, Cauca, Valle, Antioquía), Bolivia (SW.), Argentina (Jujuy to Córdoba).

H. silenoides has been much misunderstood, having been confused with *H. thesiifolum* and *H. brevistylum* in South America and, by Rodríguez Jiménez, with *H. moranense, H. pratense*, and *H. pumillum* in Central America and Mexico. To add to the confusion, Keller (1893 et opera seq.) applied the name to the Costa Rican *H. irazuense* Kuntze ex N. Robson (sect. *Brathys*).

H. silenoides, in fact, is clearly related to *H. carinatum*, in

particular to Paraguayan forms of that species. The Chilean plants ('*H. paposum*') approach these most closely, and from them there is a morphological reduction trend northward along the coastal range of the Andes as far as Lima, whence the type of the species comes. A second, higher-altitude trend has its most primitive forms in northern Peru and southern Ecuador ('*H. thesiifolium* var. *latifolium*') and runs north to Colombia (Antioquía) and south to Peru (Huánuco), and a third runs from southern Peru (Cuzco) to Bolivia and NW. Argentina. The Galápagos population is related to one of the Ecuador ones, but, being smaller in all respects, can be recognized as a distinct subspecies.



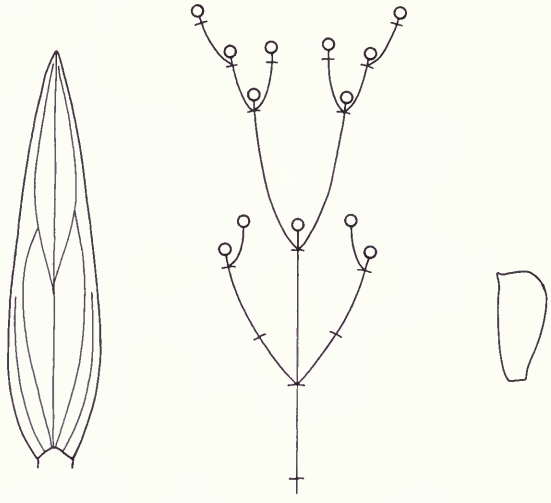
Map 25 Sect. 30: 25a. *H. silenoides* subsp. *silenoides* ●; 25b (inset, Galapagos Is.) *H. silenoides* subsp. *minus* ○.

H. silenoides can be distinguished from *H. thesiifolium* and *H. brevistylum* by the thinner, not glaucous, usually spreading, amplexicaul leaves with margin recurved, base usually decurrent to form a shallow V, 3–9 basal or near-basal veins with obscure midrib branches, densely reticulate tertiary venation, and small, often obscure glands. The inflorescence is often denser and more widely, often divergently branched, and the sepals are more variable in shape and size, being rarely regularly linear-lanceolate.

As already mentioned, *H. silenoides* comprises three populations. The lowland and upland mainland populations merge morphologically though not geographically, but the Galápagos population can be recognized as subspecifically distinct.

25a. **Hypericum silenoides** subsp. **silenoides**

Fig. 17A, Map 25.



Icon: Juss. in *Annls Mus. Hist. nat. Paris* **3**: t. 16, f. 1 (1804).

Flowers 9–16 mm in diam. *Sepals* 3–6 mm long. *Petals* 4–8 × 1–2 mm. *Stamens* 14–32. *Ovary* 1·4–2 mm long; styles 1–2 mm long. *Capsule* 4·5–8 × 2–3·5 mm.

Chile, Peru, Ecuador, Colombia, Bolivia, Argentina.

CHILE. Antofagasta: Taltal, vicinity of Aguada de Miguel Diaz, 1–4 December 1925 (fl & fr), *Johnston* 5396 (GH, K, S, US).

PERU. Arequipa: Caravelí, Loma de Taimara, 400–500 m, 19 December 1959 (fr), *Ferreyra* 13493 (NY); Camana, N. of Atiquipa, 500–600 m, 20 September 1938 (fl), *Worth & Morrison* in *U.C. Exp. Andes II* 1567 (GH, K, MO). Lima: Lomas de Lachay, 500–600 m, 24 October 1959 (fr), *Ferreyra* 13888 (NY); Atocongo, 250–500 m, 28 June 1925 (fl & fr), *Pennell* 14749 (F, GH, NY, S). Junin: Huacapistana, 1800–2400 m, 6–8 June 1929 (fr), *Killip & Smith* 24211 (NY). Huánuco: Carpish, entre Chinchao y Huánuco, 2600–2700 m, 17 October 1957 (fl), *Ferreyra* 12792 (MO, NY); Mito, *c.* 2700 m, 8–22 July 1922 (fr), *Macbride & Featherstone* 1409 (F, S). Ancash: Bolognesi, Capillapunta, cerro al sur de Chiquián, 3560 m, 14 April 1949 (fl & fr), *Cerrate* 158 (NY). La Libertad: Otuzco, Ayallapampa, 3270 m, 3 June 1949 (fl & fr), *Lopez* 1038 (NY); Trujillo, Cerro Campana, 850 m, 30 July 1961 (fl & fr), *López, Sagástegui & Sanchez* 3645 (NY). Cajamarca: Cutervo, cerca a Cutervo, 2700–2800 m, 26 July

Fig. 17 A. *H. silenoides* subsp. *silenoides*: (a, b) habit; (c) stem with leaf bases; (d) leaf); (e) sepal; (f) petal; (g) capsule. B. *H. silenoides* subsp. *minus*: (h) habit. C. *H. caespitosum*: (i) habit. D. *H. gramineum*: (j) habit (a, b, h–j × ½, c, d × 2, e–g × 4). A (a, c–g) *Johnston* 5396; (b) *Ferreyra* 7142. B. *Weber & Arp* 14452. C. *King* s.n. D. *Lea* s.n.

1963 (fr), *Ferreyra & Acleto* 15370 (NY); Cajamarca, 15 km SW. al ledo del Parque Cumbe Mayo, 3400 m, 4 March 1983 (fl & fr), *Beck* 7870 (BM, UMSA). Piura: Huancabamba, Palambla, 1100 m, 2 September 1976 (fl & fr), *Sagástegui & Cabanillas* 8549 (BM, MO); Huancamba, Abra Porculla, entre Olmos y Jaín, 2100–2200 m, 28 June 1959 (fr), *Ferreyra* 13493 (NY). Amazonas: Chachapoyas, alrededores del campo de Aviación de Chachapoyas, 2500 m, 13 April 1950 (fl & fr), *Ferreyra* 7142 (MO, NY). Ayacucho: Huanta, 3600–3900 m, February 1867 (fr), *Pearce* s.n. (BM, K); Pampalca, between Huanta and Río Apurímac, *c.* 3200 m, 4, 5, 18 May 1929 (fl), *Killip & Smith* 22230 (F). Cuzco: Paucartambo to Caica, Cerro de Colquipata, 3400–3700 m, 7 May 1925 (fl), *Pennell* 14182 (F, GH); Machupicchu, n.d. (fr), *Soukup* 185 (NY). Puño: Huancané, Miajachi, 3900 m, 28 February 1948 (fl), *Aguilar* s.n. (NY).

ECUADOR. Zamora-Chinchipe: Río Bombuscara, *c.* 2 km E. of Zamora city, *c.* 900 m, 18 May 1967 (fl), *Sparre* 16419 (S); Loja to Zamora, km. 17, 2400 m, 16 April 1973 (fl & fr), *Holm-Nielsen* et al. 3554 (AAU, GB, MO, S). Loja: Alamor-Celica road, 2–3 km S. of Río Alamor, 1400–1500 m, 5 April 1980 (fl & fr), *Harling & Andersson* 17935 (GB); Cerro Villanaco (*c.* 7 km W. of Loja), 2400–2850 m, 28 July 1944 (fr), *Camp* E-204 (NY). El Oro: Cerro Gordo (Zaruma), 1250 m, 13 August 1947 (fl & fr), *Espinosa* E 1731 (NY). Azuay: Sevilla de Oro, 10–12 km N., 11 September 1976 (fl & fr), *Øllgaard & Balslev* 9321 (AAU, BM, MO, U); Nudo de Cordillera Occidental y Cordillera Oriental, Victoria de Portete, 3000 m, 29 July 1959 (fl), *Barclay & Juajibioy* 8344 (COL, MO). Morona-Santiago: Limón (General Plaza) to Gualaceo, km 16–18, 1900–2000 m, 22 March 1974 (fl & fr), *Harling & Andersson* 12688 (GB, NY). Chimborazo: cañon of Río Chanchan above Huigra, 29–31 March 1945 (fl & fr), *Camp* E-3481 (BM, NY). Tungurahua: between Hacienda Victoria and Río Topo, 1230 m, 23 March 1939 (fl & fr), *Penland* 252 (F, GH, NY); above Puente de la Sausa, Baños, 1900 m, 23 September 1969 (fl & fr), *B. & C. Maguire* 61776 (BM, NY). Bolívar: Balsapampa to San Miguel, La Guardia, *c.* 2000 m, 16–17 May 1978 (fl & fr), *Harling, Storm & Ström* 9594 (GB, NY). Cotopaxi: Quevedo to Latacunga, Macuchi, *c.* 1600 m, 1 May 1968 (fl & fr), *Harling, Storm & Ström* 8865 (GB, NY). Pichincha: Pululagua, old crater, *c.* 25 km N. of San Antonio, 2600–3000 m, 8 March 1967 (fl & fr), *Sparre* 14726 (S); Quito, 2850 m, 17 April 1958 (fl), *Oberdorfer* s.n. (K). Imbabura: road to Intag valley above Apuela, 1950 m, 7 May 1980 (fl & fr), *Holm-Nielsen* et al. 23402 (AAU); Lago Cuicocha, 3000 m, 10 December 1966 (fr), *Sparre* 13364 (S). Carchi: Quebrada del Río Angel, 3 km NE. of San Isidro on road to El Angel, 28 January 1967 (fl), *Sparre* 14300 (S).

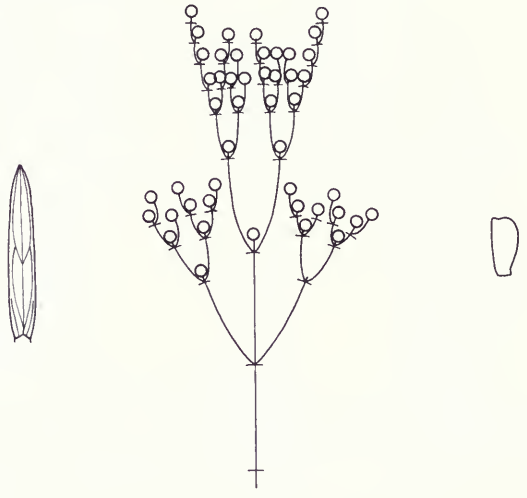
COLOMBIA. Nariño: Mun. de La Unión, Cerro La Jacoba, 2070 m, 31 July 1977 (fl & fr), *Pinto* et al. 1729 (COL); N. of Pasto, Momsurio hill, 2600 m, *Wood* 5323 (K). Cauca: Muncique, camino a la 'Mina Tapada', 1900 m, 23 July 1948 (fl & fr), *Garcia, Hawkes & Villareal* 12963 (COL); La Venta de Cajobio, above 23 km N. of Popayan, 1740 m, 24 May 1944 (fl), *Killip & Lehmann* 38428 (COL, GH, K). Valle: Costa del Pacifico, río Noya, Puerto Merizalde, 5–20 m, 20 February 1943 (fr), *Cuatrecasas* 13997c (US). Antioquía: Alto Capiro, above Sonson–Abejorral camino, *c.* 2800 m, 26–28 May 1944 (fl), *Ewan* 15764 (BM, P, S); camino entre Medellin y Río Negro, cerca de Santa Elena, 2300–2500 m, 25 October 1947 (fl), *Gutiérrez* 1067 (COL).

BOLIVIA. La Paz: Prov. Murillo, Valle de Zongo, 27·4 km below N. dam at Lago Zongo, 2500 m, 12 February 1984 (fl & fr), *Solomon, Stein & Uehling* 11869 (BM, MO); Prov. Sud Yungas, La Paz–Calacoto, Nevado Illimani, 3100–3350 m, 31 December 1980 (fl & fr), *Beck* 3929 (BM). Cochabamba: *c.* 32 km NE. of Cochabamba, road to Chimore, 1800 m, 29 March 1939 (fl), *Eyerdam* in *U.C. Exped. Andes II* 24949 (F, K, UC); Tunari, 3600 m, April–May 1892 (fr), *Kuntze* F297234 (F).

ARGENTINA. Jujuy: Capital, Míuz 9 de Octubre, 1620–1880 m, 7 April 1971 (fl & fr), *Correa* 4556 (F). Salta: Santa Victoria, La Quiaca to Santa Victoria, 16·7 km from Sta. Vict., 1050 m, 13 March 1966 (fr), *Hawkes, Hjerting & Rahn* 3827 (BM p.p., C. MO). Tucuman: Burruyacú, Cerro del Campo, January 1911 (fl), *Gonzalez* 21990 a (G); El Clavillo (Ruta 65), 1400 m, 16 January 1956 (fl), *Böcher, Hjerting & Rahn* 2348 (C). Córdoba: Villa Garcia, Tauti, 16 December 1909 (fl), *Stuckert* 20571 (G); Calamuchita, alrededores de Alos Pampa, ±1300 m, 16 December 1946 (fl), *Hunziker* 7287 (MO).

25b. **Hypericum silenoides** subsp. **minus** N. Robson, subsp. **nov.**

Fig. 17B, Map 25.



A subsp. *silenoides* floribus fructibusque minoribus differt.

H. thesiifolium sensu Stewart in *Proc. Calif. Acad. Sci.* IV, **1**: 105 (1911).

H. uliginosum var. *pratense* sensu Wiggins & Porter, *Fl. Galápagos Is.*: 597, fig. 160 (1971).

Icon: Wiggins & Porter, tom. cit.: 598, f. 160 (1971).

Flowers 5–8 mm in diam. *Sepals* 2–3 mm long. *Petals* 2·5–3·5 × 0·7–1 mm. *Stamens* 9–10. *Ovary* 0·8 mm long; styles 0·7–0·9 mm long. *Capsule* 3–4 × 1–1·5 mm.

Galápagos Islands (Isabella, Santa Cruz, San Cristóbal).

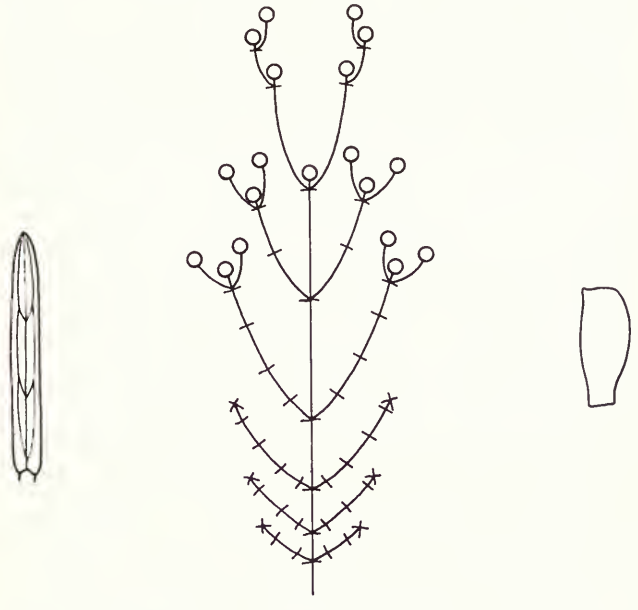
GALAPAGOS ISLANDS. Isabella: Albemarle I, 895 & 945 m, 28 August 1905 (fl), *Stewart* 2064 (BM, GH, K, MO). Santa Cruz: Indefatigable I., 435 m, 7 April 1930 (fl), *Svenson* 126 (GH, K, S); above Fortuna, 9 May 1932 (fl), *Howell* 9202 (G, GH); Central Plateau, n.d. (st.), *Fagerlind & Wiborn* 3298 (S). San Cristóbal: Chatham I., Wreck Bay, 510 m, 23 February 1906 (fl), *Stewart* 2066 (GH).

Although some of the differentia given above are distinct from those of subsp. *silenoides*, I hesitate to give the

Galápagos plant specific status because not all specimens of subsp. *silenoides* are measurable and some approach subsp. *minus* closely.

26. **Hypericum caespitosum** Cham. & Schlechtendal in *Linnaea* **3**: 126 (1828); Walp., *Repert. bot. syst.* **1**: 389 (1842); D. Dietr., *Syn. pl.* **4**: 1236 (1847); R. Keller in *Bull. Herb. Boissier* II, **8**: 180 (1908); Rodríguez Jiménez in *C. r. Soc. Biogéog.* **432**: 91, map 7 (1972). Type: Chile, Concepción, 'circa Talcaguano' [Talcahuano], April 1828 (fl & fr), *Chamisso* 186 (B†-holotype; F!, G!, NY!-photographs; G!, W!-isotypes). Rodríguez Jiménez (1973) wrongly cites *Poeppig* 782 as the type of this species. It was not collected until 1830.

Fig. 17C, Map 26.



H. brevistylum Choisy, *Prodr. monogr. Hypéric.*: 5, fig. 7 (1821), pro parte quoad spec. ex Chile, Concepción, leg. *Dumont d'Urville*; Rodríguez Jiménez in *Mems Soc. Cienc. nat. La Salle* **33**: 68, f. 13 a, b (1973). Choisy's description and illustration fit the other specimen cited (Peru, *Dombey*), not the Chilean one. Hence it is the indicated lectotype and Choisy's name should be applied to the dwarf Andean plant.

H. chilense C. Gay, *Fl. chil.* **1**: 355 (1846); Reiche in *An. Univ. Chile* **93**: 562 (1896), *Fl. Chile* **1**: 270 (1896); R. Keller in *Bull. Herb. Boissier* II, **8**: 180 (1908). Type: Chile, Valdivia, 1828–1834 (fl), *Gay* 1385 (P!-holotype; BR, F!, G!, K!, NY!, P!-isotypes; F!, GH!, NY!-photographs).

H. muscoides Philippi in *Linnaea* **33**: 31 (1865). Type: Chile, Osorno?, al pié del volcán de Osorno, *Philippi* (not seen).

H. chilense var. *muscoides* (Philippi) Reiche in *An. Univ. Chile* **93**: 562 (1896), *Fl. de Chile* **1**: 270 (1896).

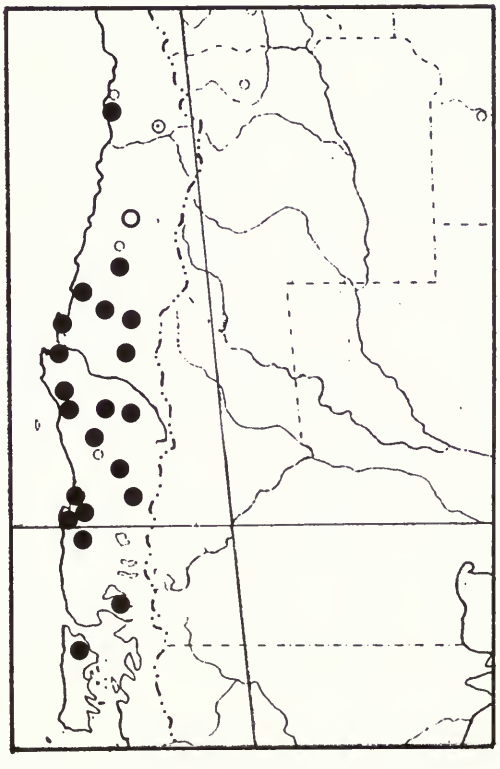
H. uliginosum var. *prostratum* R. Keller in *Bull. Herb. Boissier* II, **8**: 190 (1908). Type: Chile (without precise details).

Icon: Rodríguez Jiménez in *Mems Soc. Cienc. nat. La Salle* **33**: 69, f. 13B (1973).

Perennial or annual(?) herb 0·05–0·2 m tall, decumbent to prostrate but not rooting, much branched from the base and often forming loose cushions, lateral branches sometimes present below inflorescence, erect to ascending, not naked below. *Stems* green to vinous red, 4-lined and ancipitous when young, soon 2-lined, cortex persistent; internodes 1–17 mm long, upper ones often exceeding leaves. *Leaves* sessile, usually erect; lamina 3–18 × 0·4–1 mm, linear, margin plane to subrecurved, paler beneath, not glaucous, chartaceous; apex rounded, base parallel-sided to rounded or narrowly cuneate, sometimes subamplexicaul but not decurrent or forming V, free; basal vein 1, unbranched or with up to 3 pairs of main laterals, tertiary reticulum absent; laminar glands dense, not prominent. *Inflorescence* 1–7-flowered, dichasial/monochasial, without accessory branches, usually with lateral branches from up to 9 nodes below, the whole subcorymbiform to narrowly cylindric; primary pedicels 2–7 mm long; bracts and bracteoles linear. *Flowers* 5–9 mm in diam., stellate; buds ellipsoid, rounded. *Sepals* 2·5–5 × 0·6–1·3 mm, equal, imbricate, linear-lanceolate to narrowly elliptic or rarely narrowly oblanceolate, acute; veins 5, not or only midrib prominent; glands linear, distally interrupted to punctiform. *Petals* yellow, always (?) tinged or veined red outside, (4?–)5–7 × 1–1·5 mm, 1·5–2 × sepals, oblong-oblanceolate to narrowly oblong; apiculus obsolete; glands linear. *Stamens* 10–35, irregularly grouped, longest 3·5–5 mm long, *c.* 0·7 × petals. *Ovary* 1–1·5 × 0·6–1 mm, cylindric-ellipsoid; styles 3, 0·8–1·5 mm long, 0·8–1 × ovary, spreading; stigmas broadly capitate. *Capsule* 2·5–5·2 × 1·5–2·8 mm, cylindric-ellipsoid to cylindric, apex rounded, 1–1·3 × sepals. *Seeds* 0·6–0·7 mm long; testa finely ribbed-scalariform.

Dry or wet grassland; 90–1100 m.

Chile (Valparaiso and Corico to Chiloé).



Map 26 Sect. 30: 26. *H. caespitosum* ● (confirmed records), ○ (unconfirmed record).

CHILE. Valparaiso: Valparaiso, pre 1914 (fl), *Calvert* s.n. (BM). Corico (fide Reiche). Maule: Pañamavida, 15 December 1919 (fl), *Holway* 235 (GH). Linares: Linares 1856–1857 (fl & fr), *Germain* s.n. (BM, G, K, P. W). Nuble: 3 km W. of Recinto, 1000 m, 7 January 1936, *West* 5106 (GH, MO); El Roble, 3 February 1929 (fl), *Barros* 336 (GH). Concepción: Concepción, 90–150 m, November 1929 (fl), *Elliot* 565 (GH, K). Bio-Bio: ad Antuco, December 1868 (fl), *Poeppig* Chil. III 148 (BM, F, P. W); Pailahueque, December 1929 (fl), *Pirion* 211 (GH). Arauco: Contulmo, 29 January 1919 (fr), *Benn* s.n. (MO). Malleco: Purén, 14 December 1919 (fl), *Rehn* s.n. (F). Cautin: Depto Victoria, Termas de Tohauca to Laguna de Malleco, *c.* 14 km, 950–110 m, 10 March 1939 (fl), *Morrison & Wagenknecht* 17472 (G, GH, K); flat (ancient bed of Río Cautin) between Río Luepe Mission and Temuco, 27 November 1905 (fl), *Middleton* s.n. (BM, G, S); Valdivia: Casilla, 16 December 1898 (fl), *Buchtien* s.n. (F, G, GH, NY, P, W, Z); Calafquen, 300 m, 17 January 1927 (fl & fr), *Comber* 995 (K); [prope col Arique], January 1852 (fl), *Lechler* 414 (G, K, P, S). Llanquihue: Ensenada, 11 January 1947 (fl & fr), *Wall* s.n. (S). Chiloé: Isla de Chiloé, 1826–1830 (fl & fr), *Anderson* 128 (BM, G, K, W).

H. caespitosum is related to the southern Peruvian and Bolivian narrow-leaved forms of *H. silenoides*. Although perhaps superficially resembling some forms of *H. brevistylum*, the thinner, green (not glaucous) leaves, and red-tinged petals indicate its true affinity.

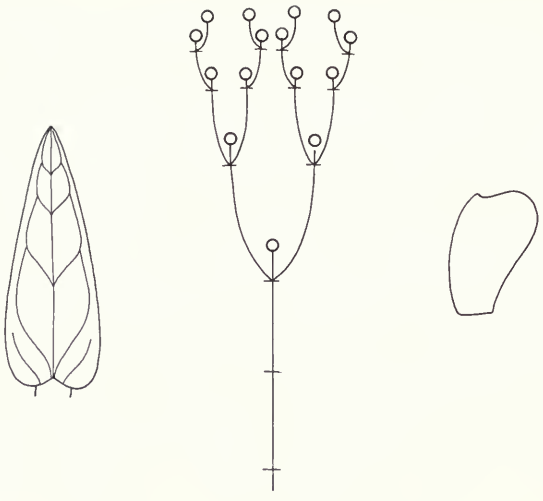
The lack of recent records from the northern and southern extremes (Valparaiso and Isla de Chiloé) may indicate a contraction in the range of *H. caespitosum*. Rodríguez Jiménez (1973) misinterpreted Arique (39°46′S; 73°04′W) as Arica (18°28′S; 70°18′W) when localizing *Lechler* 414. Her speculation that *H. caespitosum* has been introduced into northern Chile is therefore unnecessary. I am grateful to Prof. Clodomiro Marticorena of the Universidade de Concepción for drawing my attention to this error.

27. **Hypericum gramineum** G. Forster, *Fl. ins. austr.*: 53 (1786); Vahl, *Symb. bot.* **2**: 86 (1791); Benth. & F. Muell., *Fl. austral.* **1**: 182 (1863); Bailey in *Rep. Austr. Adv. Sci.* **7**: 429 (1898); Kirk, *Stud. fl. New Zealand*: 67 (1899); Cheeseman, *Man. New Zealand fl.*: 74 (1906), op. cit. 2nd ed.: 567 (1925); R. Keller in *Bull. Herb. Boissier* II, **8**: 180 (1908), in Engl. & Prantl, *Nat. Pflanzenfam.* 2nd ed. **21**: 183 (1925); Hochr. in *Candollea* **2**: 437 (1925); Allan in *N.Z. Agr.* **52**: 211, f.4 (1936); Guillaumin, *Fl. Nouv. Caléd.*: 217 (1948); Allan, *Fl. N. Zeal.* **1**: 331 (1961); Fosb. in *Occ. Pap. Bernice P. Bishop Mus.* **24**: 22 (1969); Rodríguez Jiménez in *C.r. Soc. Biogéogr.* **432**: 92, map 8 (1972), in *Mems Soc. Cienc. nat. La Salle* **33**: 97, ff. 2e, 13A, t. 1A (1973); N. Robson in *Blumea* **20**: 265, f.3 (1973), in *Fl. Males.* I, **8**: 26 (1974), in Li et al., *Fl. Taiwan* **2**: 633 (1976); N. Robson & Long in Grierson & Long, *Fl. Bhutan* **1**: 376 (1984). Types: New Caledonia, 1774 (fl & fr), *J. R. & G. Forster* 170 (BM!-lectotype – Robson, 1973); BM!, K!, P-isosyntypes); New Caledonia, 1774 (fl), *J. R. & G. Forster* 201 (GOET-syntype-photograph BM!).

Fig. 17D, Map 27.

Ascyrum involutum Labill., *Nov. Holl. pl.* **2**: 32, t. 174 (1806). Type: Australia, Tasmania, 'in capite Van-Diemen', *Labillardière* s.n. (FI-holotype).

Hypericum involutum (Labill.) Choisy in *Prodr. monogr. Hypéric.*: 50 (1821), in DC., *Prodr.* **1**: 549 (1824).



Brathys forsteri Spach in *Annls Sci. nat.* (Bot.) II, **5**: 367 (1836). Type as for *Hypericum gramineum* G. Forster.

Brathys billardieri Spach in *Annls Sci. nat.* (Bot.) II, **5**: 367 (1836). Type as for *Ascyrum involutum* Labill.

Hypericum pedicellare Endl., *Enum. pl.*: 12 (1837). Type: Australia, W. Australia, Swan River, *Hügel* s.n. (W-holotype).

H. aureum Banks & Sol. ex Hook. f., *Fl. nov.-zel.* **1**: 36 (1853), in synon. (Art. 34).

H. lalandii sensu Dyer in Hook. f. & Thomson, *Fl. Brit. India* **1**: 256 (1874); H. Léveillé in *Bull. Soc. bot. Fr.* **54**: 589, 593 (1908); R. Keller in *Bull. Herb. Boissier* II, **8**: 187 (1908), in Engl. & Prantl, *Nat. Pflanzenfam.* 2nd ed. **21**: 181 (1925); Hand.-Mazz., *Symb. sin.* **7**: 404 (1931), pro parte omnes excl. typum, non Choisy (1821).

H. foetidum Hook. f. & Thomson ex Dyer, *Fl. Brit. India* **1**: 257 (1874), in synon. (Art. 34).

H. japonicum var. *australe* R. Keller in *Bull. Herb. Boissier* II, **8**: 186 (1908). Types: Australia, Queensland, Trinity Bay, 1886 (fl & fr), *Sayer* s.n. (W!-isosyntype; BM!); Queensland, Plenty Ranges, May 1899 (fl & fr), *Walter* s.n. (Z!-lectotype – Robson, 1973).

H. japonicum var. *lanceolatum* Y. Kimura in *Bot. Mag. Tokyo* **54**: 88 (1940). Type: Taiwan, Hsinchu [Sintiku], Senkyakuseki, 29 May 1931 [sphalm. 24] (fr), *Simada* 4116 (TI!-holotype).

H. japonicum var. *kainantense* Masam. in *Trans. nat. Hist. Soc. Formosa* **33**: 168 (1943), *Fl. Kainantensis*: 211 (1943) ['*kainantensis*']. Type: China, Hainan, Kainanto, Man-nei, 25 November 1940 (fl), *Masamune & Fukuyama* 103 (TI-holotype). Without my having seen the type, the identity of this taxon must remain uncertain. *H. gramineum* has, however, been recorded from Hainan by Rodríguez Jiménez (1973). The description ('Folia coriacea linearioovata . . . Sepala ovata ca. 5 mm longa ca. 2 mm lata, acuminata') agrees more with *H. gramineum* than with *H. japonicum*.

Sarothra graminea (G. Forster) Y. Kimura in Nakai & Honda, *Nova fl. jap.* **10**: 232 (1951).

Sarothra saginoides Y. Kimura in Nakai & Honda, *Nova fl. jap.* **10**: 246, t. 81 (1951). Type as for *Hypericum japonicum* var. *lanceolatum*.

H. pauciflorum subsp. *involutum* (Labill.) Rodríguez Jiménez [in *C.r. Soc. Biogéogr.* **432**: 92, map 9 (1972), comb. invalid.

sine basion.], in *Mem. Soc. Cienc. nat. La Salle* **33**: 105 (pro parte), excl. syn. et spec. Afric. et Madag.

Icones: N. Burb. & M. Gray, *Fl. A.C.T.*: 259 (1970); Rodríguez Jiménez in *Mems Soc. Cienc. nat. La Salle* **33**: 69, f. 13A (1973).

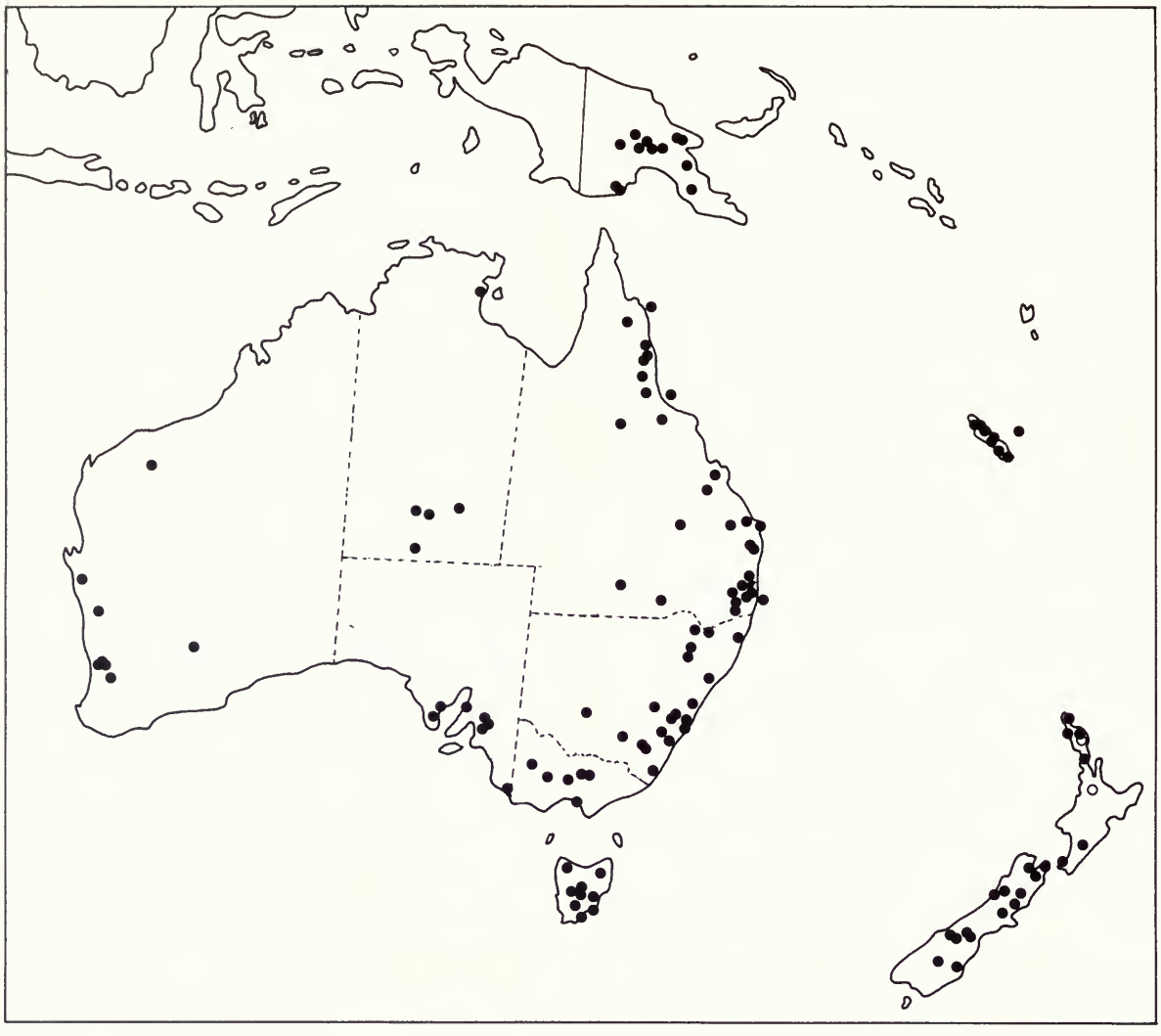
Perennial or annual herb (0·025–)0·05–0·72 m tall, erect or decumbent but not rooting, branching strictly from the base or unbranched, occasionally with strict or ascending lateral branches, sometimes naked below. *Stems* green, persistently 4-lined, ancipitous when young, cortex persistent or rarely deciduous in strips; internodes 3–33(–55) mm long, those in the upper ⅓–⅔ exceeding the leaves. *Leaves* sessile, spreading to appressed, 4–25 × 1·2–8 mm, lanceolate to linear or oblong or rarely ovate-lanceolate, margin plane or recurved, paler and ± glaucous beneath, chartaceous; apex obtuse to rounded, base cordate to rounded or sometimes cuneate, amplexicaul and usually somewhat decurrent, then forming shallow V, free; basal veins 1–3, midrib sometimes with up to 5 ± obscure branches, tertiary reticulum not evident; laminar glands small and dense above, larger and laxer beneath, not prominent. *Inflorescence* (1–2)3–*c.*30-flowered, dichasial/monochasial or pseudo-dichotomous or mixed, without accessory branches, sometimes with lateral branches from up to 3 nodes below, the whole laxly obconic to narrowly ellipsoid; primary pedicels 2–17 mm long; bracts and bracteoles triangular-lanceolate to linear. *Flowers* 5–12(–15) mm in diam., stellate; buds ellipsoid, subacute. *Sepals* 2·8–7·5(–9) × 0·8–2 mm, subequal to unequal, imbricate, lanceolate to narrowly elliptic or oblong-elliptic, acute to subacute (or rarely rounded – hybrids?); veins 3–5, only midrib sometimes prominent; glands linear, distally punctiform. *Petals* pale to bright yellow or orange, 5–10 × 2–5 mm, *c.* 1·3 × sepals, obovate to oblanceolate; apiculus obtuse to rounded; glands few, striiform, or absent. *Stamens c.* 20–50, irregular, longest 2·5–4 mm long, 0·4–0·6 × petals. *Ovary* 1·5–2·3 × 0·6–1·2 mm, narrowly ovoid-conic; styles 3, 0·7–1·8 mm, long, 0·5–0·9 × ovary, ± spreading; stigmas broadly to narrowly clavate. *Capsule* 2·5–8 × 1–3·5(–4) mm, narrowly ovoid to cylindric, 0·8–1·2 × sepals. *Seeds* 0·5 mm long, not carinate; testa finely ribbed-scalariform. 2n = 16 (n = 8), 14, see Robson & Adams (1968).

Open grassy or shrubby habitats, dry or wet but well drained; 0–1050 m (Australia, New Zealand, New Caledonia, Vietnam, Taiwan), 10–2250 m (New Guinea), 1500–3000 m (China (Yunnan), India (Assam), Bhutan).

New Zealand, Australia, New Caledonia, New Guinea (Papua-New Guinea), Vietnam, Taiwan, China (Hainan, Yunnan), India (Meghalaya, Manipur), Bhutan, Hawaii.

NEW ZEALAND. North Island. Auckland: Whangaroa, May 1897 (fl & fr), *Petrie* s.n. (Z); Aglionby Plains, Rotuiti Lake, 1851 (fl & fr), *Monro* 133 (K). Wellington: near Wellington, 1849–1852 (fl & fr), *Ralph* 142 (BM, W). South Island. Marlborough: prope Totaranui [Queen Charlotte Sound], 15 January–6 February 1770 (fl & fr), *Banks & Solander* s.n. (BM), '*Hypericum aureum* Mscr.'. Nelson: Nelson, October 1861 (fl), *Locke Travers* 32 (K). Canterbury: above Waipara, 240 m, 26 November 1866 (fl & fr), *Haast* 278 (K); Christchurch, Port hills, February 1937 (fl), *Lothian* s.n.

Map 27 Sect. 30. A: 27. *H. gramineum*, northern ●. B (p. 94): *H. gramineum*, southern ●; 39a. *H. mutilum* subsp. *mutilum*, New Zealand records ○ (see also Map 44, p. 138).



(GH); Opihi Gorge, 240 m, 1934–1935 (fl & fr), *Anderson* 111 (GH, K, NY). Otago: Hawea Flat, February 1886 (fl & fr), *Cockayne* 6 (Z); near Dunedin, December 1878 (fl), *Thomson* s.n. (BRI).

AUSTRALIA. Tasmania: Glenorchy, 13 December 1930 (fl), *Long* 261 (K); between National Park and Westerway, 150 m, 30 November 1929 (fl & fr), *Comber* 1 754 (K). Victoria: Grampian Mts., Hall's Gap, December 1912 (fl & fr), *Tilden* 964 (BM, GH, K); Frankston Gully, 5 January 1895 (fr), *Morrison* 5608 (BM, K). New South Wales: Duck R., Auburn, 15 m, 25 March 1976 (fl), *Coveny* 7559 (K); Blue Mts., *c.* 48 km S. of Katoomba, Mt. Coolong, 4 February 1938 (fl & fr), *Constable* 5482 (K); Jervis Bay, Huskisson, 25 October 1930 (fl & fr), *Rodway* 146 (K). Austr. Cap. Terr.: Paddy's River Distr., near Tidbinbilla Homestead, along Hurdle Creek, *c.* 650 m, 28 December 1952 (fl), *Hoogland* 3103 (A, BM, Z). Queensland: Moreton Distr., Blackstone, near Ipswich, 27 March 1955 (fr), *Pedley* 25 (BRI); Eight-mile Plain, near Brisbane, 2 November 1930 (fl & fr), *Hubbard* 4752 (BRI, K, L, W); Mitchell Distr., Jericho, April 1946 (fl & fr), *Clemens* s.n. (BM, K, L, MICH). Northern Territory: Chewings Range, 26 May 1977 (fr), *Latz* 7118 (BM); Carpentaria, mainland opposite Groote Island, 4 January 1803 (fl & fr), *Brown* s.n. (BM, K); Alice Springs Distr., Standley Chasm, 27 February 1961 (fl & fr), *McKee* 8665 (CANB, K). South Australia: *c.* 12 km SSW. of Mt. Gambier, Mt. Schanck, 9 January 1968 (fr), *Copley* 1783 (W); Eyre Peninsula, *c.* 20 km N. of Port Lincoln, Tod River N. of Gawler Pond, 22 November 1966 (fl), *Alcock* 1002 (H); Central Australia, South-west Plains, summit of Ayer's Rock, 30 August 1957 (fl & fr), *Schodde* 400 (K). Western Australia: Swan R., Midland Junction, 22 November 1901 (fr), *Morrison* 11029 (BM, K); Darling Range, Gooseberry Hill, 17 November 1900 (fr), *Morrison* s.n. (BM, BRI); between Gongwini and Mount Margaret, Donkey Rocks, June 1895 (fl & fr), *Spencer Moore* s.n. (BM).

NEW CALEDONIA. Bei Yaruhé, 150 m, 29 September 1902, *Schlechter* 14802 (BM, BO, K, L, Z); Mt. Aumiéri, 700 m, 28 November 1950 (fl & fr), *Guillaumin* 8819 (Z); Convilée, 9 May 1951 (fl & fr), *Guillaumin* 13060 (Z); Mt. Canala, 0–600 m, 18 June 1914 (fl), *Compton* 1263 (BM).

NEW GUINEA. Morobe: above Wau, Edie Creek Road, 1890 m, 30 June 1954 (fl & fr), *Womersley & van Royen* 5894 (A, BO, BR1, K, L, SING); Boana, airdrome, 930 m, 14 July 1938 (fl & fr), *Clemens* 8474 (A, B, CANB, L). E. Highlands: Goroka Subdistr., near Finintegu, *c.* 1450 m, 7 June 1956 (fl

& fr), *Hoogland & Pullen* 5261 (A, BM, BRI, L); Kainantu Subdistr., Noreikora Valley, *c.* 1620 m, October 1966 (fr), *Wheeler* ANU 5878 (LAE). W. Highlands: Kubor Range, Uinba, Nona-Minj Divide, 1950 m, 20 July 1963 (fl & fr), *Vink* 16313 (K. L); Hagen Subdistr., Tibi Plantation, 1500 m, 16 July 1970 (fl), *Stevens* LAE 50231 (LAE). S. Highlands: Tibinap Swamp, *c.* 9·6 km W. of Tari station, *c.* 1560 m, 22 July 1961 (fl & fr), *Pullen* 2831 (CANB, L); Tari Subdistr., Tigibi, 1600 m, 13 June 1966 (fr), *Vink* 16890 (K, L). Western: Dagwa, Orioma R., 40 m, February–March 1934 (fl & fr), *Brass* 5987 (A, BM, BO, BR1, K, L, US). Central: Mafulu, September–November 1933 (fr), *Brass* 5552 (BRI).

VIETNAM. Tourane [Da Nang] and vicinity, near beach, May–June 1927 (fr), *J. & M. S. Clemens* 3013 (BM); Nhatrang and vicinity, 11–26 March 1911 (fl & fr), *Robison* 1508 (K); Quang Binh Prov., Ban Khé, près de la mer, 22 February 1936 (fr), *Petelot* 5697 (GH); Ninh-thuan Prov., Lang-bian, pre-1912 (fl & fr), *Eberhardt* 1776 (K).

TAIWAN. Hsinchu, Chikutogai, 22 July 1939 (fl & fr), *Hsu* 27 (TAI).

CHINA. Hainan: Chang-Kiang Distr., Chung Ngo Shan, 24 February 1934, *Lau* 3368 (P, n.v.). Yunnan: Shweli-Salwin divide, 3000 m, August 1913 (fl & fr), *Forrest* 11809 (BM, E, K, W); Tsangshan range, W. of Talifu, August 1922 (fl), *Ro* 6407 (BM, K, US, n.v.); Mengtze, 1500 m, pre-1898 (fl & fr), *Henry* 11134 (K); vicinity of Yunnan-sen, pre-November 1906 (fr), *Maire* 150 (BM).

INDIA. Meghalaya: Khasia, Shillong, 1500 m, 19 October 1872 (fl & fr), *Clarke* 18645 (BM, K). Manipur: Sirhoi, 2400 m, 16 June 1948 (fl), *Kingdon Ward* 17693 (A, BM).

BHUTAN. South: Chukka Timpu, 1800 m, 6 July 1914 (fl & fr), *Cooper* 1341 (BM). Central: Dhur, near Bumthang, 3300 m, 23 July 1949 (fl & fr), *Ludlow, Sherriff & Hicks* 19502 A (BM). North: Gyasa Dzong, 3000 m, 12 June 1949 (fl), *Ludlow, Sherriff & Hicks* 16515 (BM).

HAWAII. Hawaii: N. Kona, Kanahaha, 17 September 1948 (fr); *Greenwell* in *Degener* 19254 (BISH); ibid., 25 June 1911 (fl), *Forbes* 253 H (BISH).

H. gramineum, despite its Old World distribution, is most closely related to the Paraguayan form of *H. carinatum* sensu stricto (i.e. not 'H. altissimum') and to the Chilean (primitive) form of *H. silenoides* ('H. paposum'). From *H. carinatum* it differs inter alia by the trimerous ovary and consequent narrower capsule and by all parts being smaller and narrower. It differs from *H. silenoides* in having leaves thicker, ± glaucous, and often appressed, with 1–3 basal veins (not (3)5–9) and no evident tertiary reticulate venation, pedicels up to 17 mm long, larger (particularly broader) petals, usually more numerous stamens (20–50, not (9)14–32), and clavate not capitate stigmas.

H. gramineum is very variable, the largest forms (morphologically nearest to its S. American relatives) being in south-eastern Australia and New Zealand. In Australia there are reduction trends north and west, to Queensland and Northern Territory on the one hand and Western Australia on the other, to less strict, more branching forms smaller in all their parts. The New Zealand trend is continued to New Caledonia and New Guinea, where laxer, less strict, more grass-like forms occur (hence the specific epithet). The lowland form of Vietnam and Taiwan is like the laxer type of Queensland and Northern Territory, whereas the upland (Himalayan and Khasian) form is strict and more similar to the New Zealand and south-eastern Australian type. The Hawaiian plants are also strict.

It is tempting to suggest that the trans-South-Pacific links of *H. gramineum* indicate that it once had an Antarctic type of distribution. This, however, seems most unlikely for two main reasons:

i) The genus does not now occur on the western side of S. America south of central Chile (*H. caespitosum* Cham. & Schlechtendal).

ii) As *Hypericum* appears to have originated in Africa and to have spread overland westwards to S. America, by the time the ancestors of *H. gramineum* reached the west coast, the land-links with Antarctica (and Australasia?) would have long been broken. Hence the most likely hypothesis is that the progenitor of *H. gramineum* reached south-east Australasia by ancient long-distance dispersal, to New Zealand and then to SE. Australia, or vice versa. The morphological facts already mentioned would then suggest that long-distance dispersal also carried the strict form to the eastern Himalaya and Hawaii from south-eastern Australia or New Zealand and the lax form to Vietnam, Hainan, and Taiwan. Alternatively, the Taiwan introduction could have been via New Guinea (see Robson, 1972: 267, f. 3).

The two Asiatic species of sect. *Trigynobrathys*, *H. japonicum* and *H. gramineum*, can nearly always be differentiated, but some Bhutanese specimens have apparently intermediate characters. It is not clear whether these are the result of convergence or hybridization.

Subsect. 2. **Knifa** (Adans.) N. Robson, **stat. nov.**

[10]*Knifa* Adans., *Fam. pl.* **2**: 444 (1763). Type: *H. mutilum* L.

Tridia Korth. in *Tijdschr. Natuurl. Gesch. Physiol.* **3**: 17 (1836). Type: *T. frankenioides* Korth. = *H. japonicum* Thunb. ex Murray.

Sarothra sect. Spachium series *Knifa* (Adans.) Y. Kimura in Nakai & Honda, *Nova fl. jap.* **10**: 233 (1951).

Sarothra sect. *Spachium* series *Japonica* Y. Kimura, tom. cit.: 233 (1951). Type: *S. japonica* (Thunb. ex Murray) Y. Kimura (= *H. japonicum* Thunb. ex Murray).

Hypericum sect. *Knifa* (Adans.) N. Robson in *Bull. Br. Mus. nat. Hist.* (Bot.) **16**: 2 (1987), pro parte incl. typum.

Type: *H. mutilum* L.

Subshrubs, shrublets or herbaceous perennial or annual herbs, with leaves always free, styles 3(4–5 or very rarely 6–8), and capsules narrowly ovoid or ellipsoid to cylindric or, if globose, then styles 5(6–8), plant annual, and leaves not decurrent.

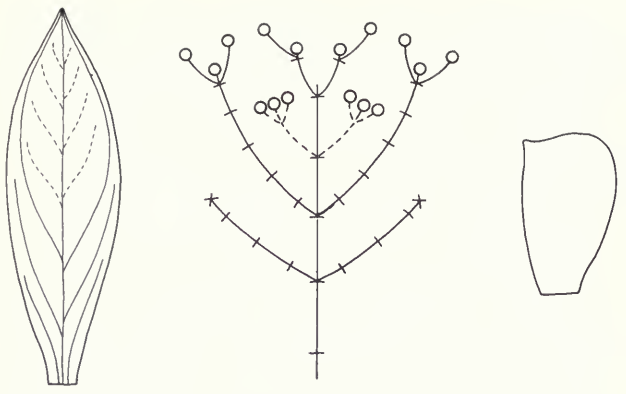
28. **Hypericum relictum** N. Robson, **sp. nov.**

H. rigido subsp. *bracteato* N. Robson affinis, sed habitu diffusiori, foliis e basi 3-nervis, stylis 3 longioribus tenuibus stigma capitata, inter alia differt. Type: Colombia, Santandér, eastern slope of Páramo de Las Coloradas, above La Baja, 3300 m, 27 January 1927 (fl & fr), *Killip & Smith* 18380 (COL!-holotype; A!, GH!, US!-isotypes).

Fig. 18A, Map 28.

H. silenoides sensu Rodríguez Jiménez in *Mems Soc. Cienc.*

[10]For more detailed synonymies see Part 1: 338 (1977) and this part: 47.



nat. La Salle **33**: 51 (1973), pro parte, quoad specim. *Killip & Smith* 18380, non Juss. (1804).

Subshrub 0·6–0·9 m tall, spreading, with branches divergent or ascending. *Stems* orange-brown, 4-angled, markedly ancipitous when young; cortex exfoliating in strips; internodes 5–21 mm long, shorter than leaves. *Leaves* sessile spreading from above base, not tetrastichous, persistent; lamina 12–20 × 2·5–6·5 mm, very narrowly elliptic to linear or oblanceolate, plane or with subrecurved margin, not cucullate, midrib slightly prominent beneath and smooth, concolorous, subglaucous, subcoriaceous; apex acute, margin entire, base narrowly cuneate, not sheathing, free; basal or near-basal veins 3, with 2–3 pairs of ascending and sometimes branching midrib branches, tertiary reticulation not visible; laminar glands dense, not prominent. *Inflorescence* 1–9-flowered, terminal, branching dichasial/monochasial or occasionally mixed pseudo-dichotomous, often with paired flowering branches from 1–2 nodes below; primary other pedicels 5–7 mm long, incrassate immediately below flower; upper leaves and bracteoles foliar, gradually reduced, to linear-elliptic. *Flowers* 15–20 mm in diam., stellate. *Sepals* 5·5–9 × 1·2–3 mm, subequal, imbricate, broadly to narrowly elliptic, acute to subacuminate; veins 3–5, unbranched?, not or scarcely prominent. *Petals* bright? yellow, not or slightly tinged red in bud, 10–15 × 4–5 mm, *c.* 1·8 × sepals, oblanceolate; apiculus acute; glands striiform, distally punctiform. *Stamens c.* 40, irregular?, longest 5–6 mm long, *c.* 0·4 × petals. *Ovary c.* 3 × 2 mm, ovoid-ellipsoid; styles 3, 4 mm long, 1·3 × ovary; stigmas capitate. *Capsule* 4–5 × 2·5–3 mm, ovoid-ellipsoid, shorter than sepals. *Seeds* not seen.

Eastern slope of páramo; 3300 m.

Colombia (Santandér).

COLOMBIA. Santandér: see type.

H. relictum has been so named because it has remained in South America while its nearest derivative species are in central Mexico and South Africa.

The nearest ancestral taxon to *H. relictum* is *H. rigidum* subsp. *bracteatum* (from SE. Brazil, São Paulo), which is more woody and has a pentameous ovary and leaves with 7 basal veins. The wide gap in distribution between these taxa, which includes the Amazon valley and the Guyana highlands, indicates an ancient disjunction between them; and the above-mentioned wide geographical links between *H. relictum* and two of its derivative groups (*H. pauciflorum*/*H. anagalloides* (Spp. 32–47) and *H. lalandii* and its relatives (Spp. 48–52)) give support to this hypothesis.

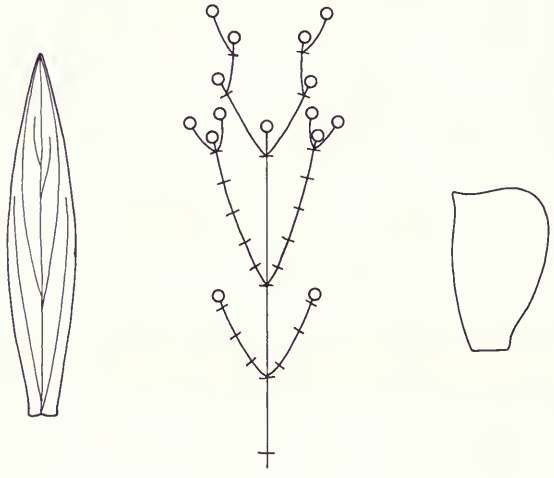
29. **Hypericum killipii** N. Robson, **sp. nov.**

Fig. 18B, Map 28.

H. thesiifolio Kunth affinis, sed foliis anguste ellipticis vel oblanceolatis subcoriaceis, floribus maioribus, sepalis ellipticis, stylis longioribus, capsulis latioribus ellipticis, differt. Type: Colombia, Santandér, vicinity of La Baja, 2700–3500 m, 14–31 January 1927 (fl), *Killip & Smith* 17172 (COL!-holotype; F!, US!-isotypes).

H. silenoides sensu Rodríguez Jiménez in *Mems Soc. Cienc. nat. La Salle* **33**: 51 (1973), pro parte, quoad specim. *Killip & Smith* 17172, 18278, non Juss. (1804).

Perennial herb 0·2–0·35 m tall, erect from decumbent rooting base, unbranched or with branches from lower nodes erect or ascending. *Stems* orange-brown, 4-angled, somewhat ancipitous when young, cortex exfoliating in strips; internodes 5–28 mm long, shorter to longer than leaves. *Leaves* sessile, erect to divergent, not tetrastichous, persistent; lamina (7–)11–23 × 2–3·5 mm, narrowly elliptic to linear or oblanceolate, plane or with subrecurved margin, not cucullate, midrib scarcely prominent beneath and smooth, concolorous, subglaucous, subcoriaceous; apex acute, margin entire, base narrowly cuneate, not sheathing, free; basal veins 1–3, without or with up to 3 ascending but not branching midrib branches, tertiary



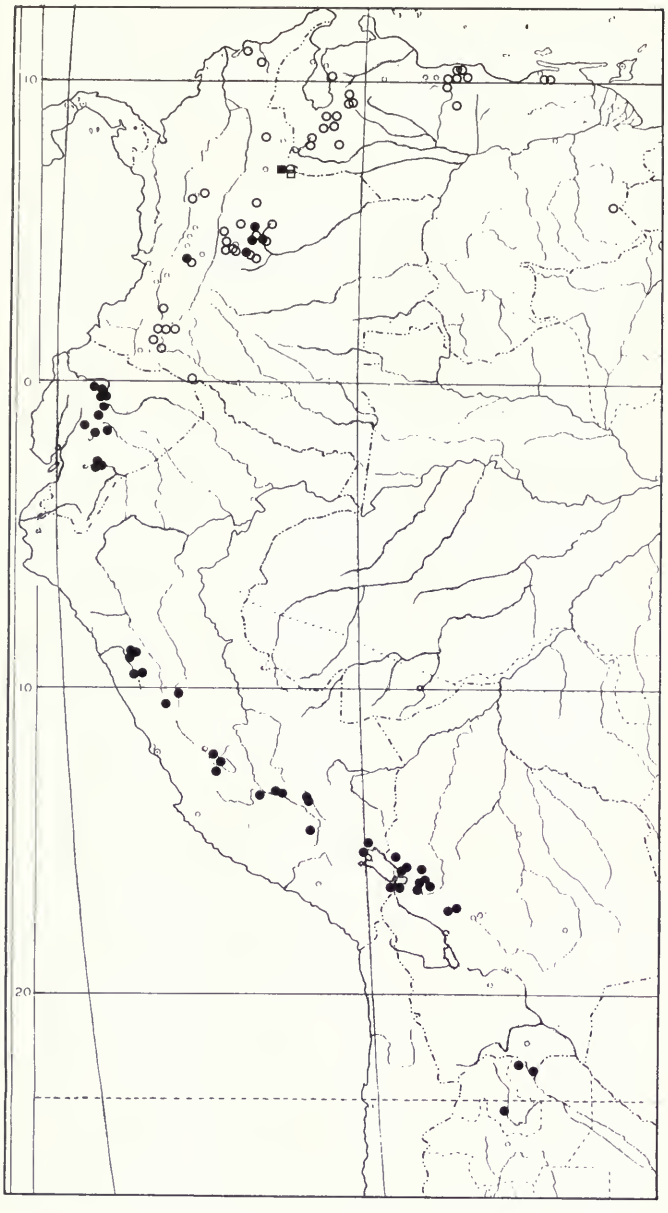
reticulation not visible; laminar glands dense, not prominent. *Inflorescence* 1–7-flowered, terminal, branching dichasial/monochasial or occasionally mixed pseudo-dichotomous, often with flowering branches form 1–2 nodes below; primary pedicels 4–8 mm long, slightly incrassate above; bracts and bracteoles linear. *Flowers* 12–16 mm in diam., stellate. *Sepals* (4–)5–9 × 1·5–2·5 mm, subequal, imbricate, elliptic to linear-oblong, acute to subacuminate; veins 3–5, unbranched, not or slightly prominent. *Petals* 7–10 × 3–5 mm, *c.* 1–3 × sepals, obovate; apiculus obtuse?; glands striiform, distally punctiform. *Stamens* 30–40, irregular?, longest 4–5 mm long, *c.* 0·5 × petals. *Ovary c.* 2·5–3 × 2 mm, ovoid; styles 3, 2·5–3 mm long, *c.* 1 × ovary; stigmas broadly capitate. *Capsule* (5·5–)6–7 × 3–3·5 mm, rather broadly ellipsoid, shorter than or equalling sepals. *Seeds* 0·6 mm long; testa finely linear-scalariform.

Open hillsides and wooded river banks; 2200–3500(?) m.

Colombia (Santandér, Norte de Santandér, Cundinamarca?).

COLOMBIA. Norte de Santandér: between Mutiscua and

Fig. 18 A. *H. relictum*: (a) habit; (b) leaf; (c) sepal; (d) petal; (e) young capsule with old outer floral parts (partly cut away). B. *H. killipii*: (f) habit; (g) leaf; (h) sepal; (i) petal; (j) young capsule with old outer floral parts (partly cut away) (a, f × ½; b, g × 2; c, d, h, i × 4; e, j × 3). A. *Killip & Smith* 18380. B. *Killip & Smith* 17172.



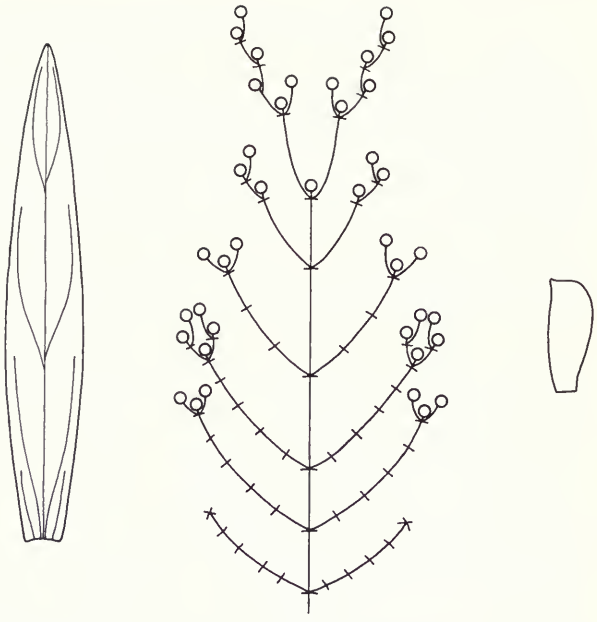
Map 28 Sect. 30: 28. *H. relictum* ■; 29. *H. killipii* □; 30. *H. thesiifolium* (part, see also Map 30, p. 106) ○; 31. *H. brevistylum* ●.

Pamplona, 2700–3400 m, 23 February 1927 (fl), *Killip & Smith* 19684 (US). Santandér: Río de la Baja, below La Baja, 2200–2300 m, 26 January 1927 (fl), *Killip & Smith* 18278 (COL). Cundinamarca?: no locality ('Flora Neogranadina Bogotana'), n.d. (fl & fr), *Holton* 783 (NY).

Although *H. killipii* grows in the same region as *H. relictum* and is its closest known relative, these populations differ in several respects (e.g. habit, leaf shape, inflorescence branching, style length, stigma shape) and therefore each deserves specific rank.

H. killipii is nearer in all characters to the Andean (*H. thesiifolium*) and Mexican (*H. paucifolium*) derivative groups than is *H. relictum*, and differs essentially from the African (*H. lalandii*) derivative group only in the broader stigma and ellipsoid capsule.

30. **Hypericum thesiifolium** Kunth in Humb., Bonpl. &



Kunth, *Nov. gen. sp.* **5**: 192 (1822); Wedd., *Chlor. andina* **2**:269 (1857); Triana & Planchon in *Annls Sci. nat.* (Bot.) IV, **18**: 290 (1862), excl. syn. *H. moranense* Kunth; Knuth in *Reprium Spec. nov. Regni veg.* **43**: 484 (1927). Type: Colombia, Cauca, in Andibus Novo-Granatensium prope Almaguer, 2160 m, November 1801 (fl & fr), *Humboldt & Bonpland* s.n. (P-HUM-holotype; P!-isotype).

Maps 28, 30.

H. uliginosum Kunth in Humb., Bonpl. & Kunth, *Nov. gen. sp.* **5**: 194 (1822); Choisy in DC., *Prodr.* **1**: 547 (1824); D. Dietr., *Syn. pl.* **4**: 1235 (1847); Trevir., *Hyper. sp. animadv.*: 8 (1861); R. Keller in Engl. & Prantl, *Nat. Pflanzenfam.* **3** (6): 215 (1893), in *Bull. Herb. Boissier* **6**: 263 (1898), in op. cit. **8**: 190 (1908), in Engl. & Prantl, *Nat. Pflanzenfam.* 2nd ed. **21**: 183 (1925); Knuth in *Reprium Spec. nov. Regni veg.* **43**: 483 (1927); Steyerm. in *Fieldiana Bot.* **28** (4): 987 (1951): Type: Venezuela, Distr. Fed., prope La Venta Grande Caracasanorum, 1080 m, January 1799 (fl & fr), *Humboldt & Bonpland* s.n. (P-HUM-holotype; P!-isotype). Although Choisy (1824) cited only *H. uliginosum* and has been followed in this usage by several authors, the first authors to unite *H. uliginosum* and *thesiifolium* were Triana & Planchon (1862), who chose the name *H. thesiifolium*. Their choice must be followed.

H. uliginosum var. *nigropunctatum* R. Keller in *Bull. Herb. Boissier* **6**: 264 (1898) ['*nigro-punctatum*'], pro parte quoad lectotypum. Type: Venezuela, Distr. Fed., Caracas, 14 January 1892 (fl & fr), *Warming* s.n. (C!-lectotype, mihi). For other syntype, see 34. *H. philonotis*. This species does not have dark glands. As in all members of sect. *Trigynobrathys*, only pale glands are present. In this, as in several other cases, Keller was misled by dark-coloured 'pellucid' glands, mistaking them for hypericin-containing glands.

H. uliginosum forma *warmingii* R. Keller in *Bull. Herb. Boissier* **6**: 265 (1898). Types: Venezuela, Distr. Fed., Caracas, 1891 (fl & fr), *Warming* 538 (C!-lectotype, mihi; GH!, P!-photographs); ibid., 14 January 1892 (fl & fr), *Warming* 1000 (C!-syntype; P!-photograph).

H. uliginosum var. *warmingii* (R. Keller) R. Keller in *Bull. Herb. Boissier* II, **8**:190 (1908).

H. uliginosum var. *erectum* R. Keller in *Bull. Herb. Boissier* II, **8**: 191 (1908). Type: Costa Rica, Alajuela, Route de Desamperados, July 1892 (fl & fr ?), *Tondúz* 687 (G!-holotype; BR, F!, MICH!, NY!, P!, US!-isotypes).

H. uliginosum var. *laeve* R. Keller in *Bull. Herb. Boissier* II, **8**: 190 (1908). Type: Venezuela, Distr. Fed., Caracas, June–July 1865 (fl & fr), *Moritz* 139 (G!-holotype; BM!, BR-isotypes; P!-photograph).

H. longibracteatum R. Keller in *Bot. Jb.* **58**: 198 (1923). Type: Costa Rica, Limon?, entre San Ramón et San Mateo, Río Jesus, 600–800 m, 21 June 1901 (fr), *Brenes* 14513 (B†-holotype; GH!-isotype; F!, GH!, P!, US!-photographs).

H. silenoides sensu Rodríguez Jiménez in *C.r. Biogéogr.* **432**: 91, map 2 (1972), in *Mems Soc. Cienc. nat. La Salle* **33**: 51 (1973), pro parte.

Perennial or annual (?) herb, 0·07–0·65 m tall, erect or decumbent at the base, unbranched or with branches below inflorescence and/or near base or more rarely in between, erect or ascending, not rooting. *Stems* green to orange-brown, persistently 4-angled, ancipitous when young, cortex exfoliating in strips; internodes 2–35 mm long, the upper longer than leaves. *Leaves* sessile, erect to ± spreading; lower ones eventually deciduous; lamina 8–27 × 0·8–6 mm, narrowly lanceolate to narrowly elliptic-oblong or linear, margin plane or rarely (only due to drying) recurved, not cucullate, midrib slightly prominent beneath, paler beneath, subglaucous, ± thickly to thinly chartaceous; apex acute or rarely (lower leaves) subacute to obtuse, margin entire, base rounded-amplexicaul to narrowly cuneate, not decurrent or sheathing, rarely forming shallow V, free (the pair usually separated by apical boss of stem-line); basal veins 1–3 (or very rarely up to 7), with 1–4 pairs of ascending midrib branches, tertiary reticulation not or scarcely visible; laminar glands dense, not prominent, sometimes (in Costa Rica) coalescing to form streaks or lines. *Inflorescence* 3–32-flowered, terminal, branching dichasial/monochasial, often with paired flowering branches from up to 5 nodes below, the whole laxly corymbiform to ellipsoid or narrowly cylindric; primary pedicels 1·5–6 mm long; bracts and bracteoles oblong-linear to linear-subulate. *Flowers* 6–10 mm in diam., stellate; buds narrowly ovoid-elliptic, acute. *Sepals* 3–5 (–5·5) × 0·7–1 (–1·8) mm, subequal to equal, not or scarcely imbricate, narrowly lanceolate to linear-oblong, acute; veins 3–5, unbranched, only midrib sometimes slightly prominent; glands linear, distally punctiform. *Petals* bright yellow to orange-yellow, tinged red in bud, 4–5·5(–7) × 1·2–1·7(–2·1) mm, 1·2–1·3 × sepals, oblong-oblanceolate to narrowly oblong; apiculus obsolete; glands linear, distally striiform to punctiform. *Stamens* 16–22, irregular, longest 2·5–3·5 mm long, 0·6–0·7 × petals. *Ovary* 1·3–1·6 × 0·6–1 mm, narrowly ovoid-ellipsoid; styles 3 (or rarely 4), 1–1·5(–2) mm long, 0·75–1·2 × ovary, ascending; stigmas broadly capitate. *Capsule* 4·8–7 × 1·8–3 mm, narrowly ovoid-cylindric to narrowly cylindric, 1·4–1·6 × sepals. *Seeds* 0·5–0·6 mm long; testa finely linear-reticulate.

Moist open habitats (roadsides, open woodland, boggy pastures, etc.); (200–) 700–3420 (?–3900 m).

Costa Rica (Cartago, San José, Heredia, Alajuela, Puntarenas), Panama (Chiriquí, Bocas del Toro), Venezuela (Tachirá to Sucre, Bolívar), Colombia (Magdalena to Putumayo).

COSTA RICA. Alajuela: Volcán Poas, 2400 m, March 1896 (fl), *Donnell Smith* 6445 (BM, K, MICH, US); *c.* 2 km E. of Zarcero, 2000 m, 15 February 1966 (fl), *Molina* et al. 17109 (F, NY, US). Cartago: *c.* 10 km SW. of Navarra and *c.* 10 km S. of Cartago, 29 August 1968 (fr), *Wilbur & Stone* 10579 (DUKE, F, MO, US). Heredia: above Cerro La Cruz, 8 km NW. of Heredia, 2000 m, 1 February 1970 (fl & fr), *Lent* 1914 (F, S). Puntarenas: N. of San Isidro del General, 1500 m, 12 August 1971 (fl), *Wunderlin* et al. 711(MO). San José: Cordillera Talamanca, Cerro de la Muerte above El Empalme, 2000 m, 26 February 1966 (fl & fr), *Molina, Burger & Wallenta* 17901 (BM, F, GH, NY, US, W).

PANAMA. Bocas del Toro: 1–2 km WSW. of Itamut camp, 3175 m, 6–7 March 1984 (fl), *Davidse* et al. 22620 (BM, MO). Chiriquí: Volcán de Chiriquí, vicinity of Casita Alta, *c.* 1500–2000 m, 28 June–2 July 1938 (fl & fr), *Woodson, Allen & Siebert* 849 (F, MO, NY); Cerro Punto, 1800 m, 27 June 1969 (fl), *Tyson* 5813 (DUKE, MO).

COLOMBIA. Magdalena: mun. de Santa Marta, entre Cerro Quemado y Cerro San Lorenzo, hoya Cerro Kennedy, *c.* 2600 m, 10 August 1971 (fl & fr), *Romero Castañeda & Llinás* 11296 (COL, MO); Sierra Nevada de Santa Marta, mts. of San Sebastian, June 1844 (fl), *Purdie* s.n. (GH, K, S). César: Sierra Nevada de Santa Marta, between Saccaracunge and La Nevadita, 2000–2600 m, 13 July 1985 (fl & fr), *Wood* 4980 (K). Norte de Santandér: Culaga Valley near Tapata (N. of Toledo), 1500–2100 m, 3–8 March 1927 (fl), *Killip & Smith* 20487 (COL, GH). Santandér: 35 km W. of Velez, *c.* 6 km E. of La Belleja, 2250 m, 25 September 1944 (fr), *Fassett* 25800 (GH, MO, WIS); mun. de Bolívar, 1900 m, 24 July 1948 (fl & fr), *Uribe* 1784 (COL.). Antioquía: Boquerón de Mezelli, *c.* 2500 m, 2 June 1948 (fl & fr), *Barkley, Franco & Posada* 185 (MO, US n.v.); alredores de Angelópolis, *c.* 1950 m, 22 November 1947 (fl & fr), *Barkley & Gutiérrez* 1686 (BM, COL, NY). Cundinamarca: San Francisco a La Vega, 1500–1800 m, 18 September 1961 (fl & fr), *Garcia-Barriga* 17355 (COL); between Sisga and Macheta, 2800 m, 3 September 1983 (fl & fr), *Wood* 3961 (K). Meta?: carretera entre Cáqueza y Villavicencio, *c.* 700–800 m, 1967 (fl & fr), *Schwabe* 67/068 (COL). Tolima: San Agustin, 24 February 1899 (fr), *Sprague* 254 (BM, K). Valle de Cauca: Loma de Barragán desde La Parrilla a La Machuca, 2750–2660 m, 13–14 April 1946 (fl), *Cuatrecasas* 20728 (F). Cauca: Popayan, carretera a Totoró, 2500–2830 m, 8 April 1970 (fr), *Lozano & Ruíz* 1547 (COL); Macizo Colombiano alredores de La Hoyola, 2910 m, 20 September 1958 (fl), *Idrobo, Pinto & Bischler* 3531 (COL). Huila: mun. de San Agustin, Parque Arqueológico, 1700 m, 3 December 1957 (fl & fr), *Romero Castañeda* 6641 (COL). Caqueta: Cordillera Oriental, vertiente oriental, Quebrada del Río Hacha, abajo de Gabinete, 2100–2250 m, 23 March 1940 (fl & fr), *Cuatrecasas* 8571 (COL). Putumayo: Valle de Sibundoy, *c.* 2200 m, 7 May 1963 (fl), *Bristol* 959 (COL, GH); Colon, 2300 m, 4 May 1939 (fl), *Alston* 8353 (BM).

VENEZUELA. Táchira: 25 km above Pregonera, Boca del Monte, 2250 m, 13 November 1980 (fl & fr), *Maas & Tillett* 5281 (BM, V, VEN); inter Betania, Villa Paez et Delicias, 2200–2300 m, 14 November 1976 (fl & fr), *Charpin & Jacquemoud* 13315 (G). Mérida: Apartaderos to Valera, 25 km, 3000 m, 20 August 1964 (fl), *Breteler* 4168 (NY, U); Páramo de Mucuchies, 3900 m, April 1951 (fl), *Vareschi & Lasser* 367 (VEN). Trujillo: El Dividive, 200 m, November 1922 (fl), *Pittier* VEN 8569 (VEN). Guarico: Cerro Platillon, al suroeste de San Juan de Los Morros, 1900 m, 19 October

1967 (fl), *Rivero & Esteves* VEN 76244 (VEN). Aragua?: prope coloniam Tovar, 1854–1855 (fl), *Fendler* 39 (GH, K, MO). Distrito Federal: WNW. of Caracas, vicinity of I.V.I.C. headquarters, 7 February 1973 (fl & fr), *Croat* 21296 (MO, VEN); Parque Nacional El Avila, NO. de Caracas, 1200–1300 m, 22 February 1971, *Morillo & Manara* 321 (VEN). Miranda: Los Teques, 1200 m, 29 January 1938 (fl & fr), *Alston* 5259 (BM); Carrizal y Colinas, 19 March 1972 (fr), *Morillo* et al. 1937 (VEN). Sucre: Cerro Turumiquire, between La Trinidad and headquarters of Río de Amana, 1300–1800 m, 10 May 1945 (fl), *Steyermark* 62690 (VEN); between La Guaira and Río Grande, 12 June 1917 (fr), *Curran & Haman* 996 (GH). Bolivar: Distr. Roscio, campamento de la C.V.G. en Parupa, ribera S. del Río Parupa bajo, 1250 m, 8 March 1983 (fl & fr), *Huber* 7449 (MY).

H. thesiifolium has frequently been confused with *H. moranense, H. pratense, H. brevistylum*, and *H. silenoides*, which all have come to look similar as a result of convergence. *H. silenoides* is a 3-styled derivative of the *H. brasiliense* group; the others are derived from *H. relictum*: *H. thesiifolium* and *H. brevistylum* directly, *H. moranense* and *H. pratense* respectively via *H. pumillum* and *H. pauciflorum*. For the distinctions between *H. silenoides* and the rest, see under that species (p. 87). *H. thesiifolium* and *H. brevistylum* both have their most primitive forms in central Colombia and diverge geographically and morphologically from there, *H. thesiifolium* erect with narrowly elliptic to lanceolate or linear leaves and narrow sepals, *H. brevistylum* decumbent to prostrate with broadly elliptic to oblanceolate leaves and relatively broad sepals. *H. moranense* and *H. pratense* resemble *H. thesiifolium* in general form, but their leaves are always linear, never lanceolate with rounded-amplexicaul base (as in some plants of *H. thesiifolium* from northern Colombia and Venezuela). *H. pratense* and *H. thesiifolium* approach one another in Central America, *H. pratense* extending into north-western Nicaragua and *H. thesiifolium* reaching western Costa Rica. In this region, however, they can always be distinguished by the leaf glands, which in *H. pratense* are punctiform but in *H. thesiifolium* have united in rows to form streaks or lines.

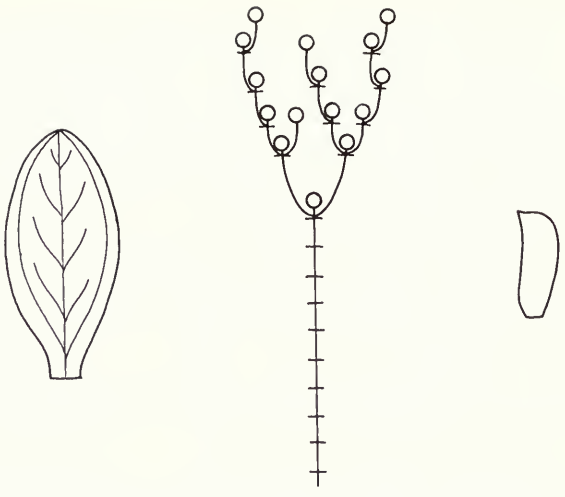
31. **Hypericum brevistylum** Choisy, *Prodr. monogr. Hypéric.*: 51 (1821), pro parte quoad lectotypum et t.7, in DC., *Prodr.* **1**: 550 (1824); D. Dietr., *Syn. pl.* **4**: 1237 (1847); Wedd., *Chlor. andina* **2**: 270 (1857); R. Keller in *Bull. Herb. Boissier* II, **8**: 180 (1908); in Engl. & Prantl, *Nat. Pflanzenfam.* 2nd ed. **21**: 183 (1925); Foster in *Contr. Gray Herb. Harv.* **184**: 131 (1958). Type: Peru, without precise locality, (fl & fr), *Dombey* s.n. (G–DC!-lectotype; P!-isotype; F!-photograph). For a discussion of this lectotypification, see p. 101.

Map 28.

? *H. uliginosum* var. *scabriusculum* R. Keller in *Bull. Herb. Boissier* II, **8**: 191 (1908). Type: Peru, without precise locality, *Herb. Pavon* (?). The type of this variety has not been found, but it must either belong here or (more likely) to a narrow-leaved form of *H. silenoides*.

H. punense Gleason in *Torreya* **29**: 137 (1929). Type: Peru, Puño, Arauco ['Araranca'] 1230–1290 m, 21 April 1925 (fl & fr), *Pennell* 13446 (NY!-holotype; F!, GH!-isotypes; K!, MO!, P!-photographs).

H. thesiifolium sensu Foster in *Contr. Gray Herb. Harv.* **184**: 131 (1958).



H. silenoides sensu Rodríguez Jiménez in *C.r. Soc. Biogéogr.* **432**: 91 map 2 (1972), in *Mems Soc. Cienc. nat. La Salle* **33**: 51 (1973), pro parte.

Icon: Choisy, *Prodr. monogr. Hypéricac.*: t. 7 (1821).

Annual (or perennial?) herb, ± laxly caespitose, with stems 0·05–0·18 m long, branched from the base, with branches ascending to prostrate, rooting. *Stems* green to orange-brown, 4-angled and ancipitous when young, lower parts 2-lined, cortex persistent; internodes 1·5–15 mm long, all usually shorter than leaves. *Leaves* sessile, ascending or spreading, persistent; lamina 5–10 × 1–4 mm, elliptic or elliptic-oblong to oblanceolate or narrowly oblong or rarely narrowly lanceolate, margin plane or subrecurved, not cucullate, midrib prominent beneath, slightly paler beneath or concolorous, sometimes glaucous, chartaceous; apex obtuse or rounded to acute, margin entire, base narrowly cuneate, not decurrent or sheathing, free (the pair separated by apical boss of stem-line); basal vein 1, sometimes with 1(2) pairs ascending near-basal midrib branches, tertiary reticulation very rarely visible; laminar glands dense, not prominent. *Inflorescence* 1–11-flowered, terminal, branching dichasial/monochasial, occasionally with 1–2 flowering branches from node below; primary pedicels 1·5–3·5(–6) mm long; bracts and bracteoles linear to linear-subulate. *Flowers* 6–8 mm in diam., stellate; buds narrowly ovoid-ellipsoid, acute. *Sepals* 2·5–6 × 0·6–2·2 mm, unequal, imbricate, narrowly oblong or oblanceolate to narrowly triangular-lanceolate, acute, often cucullate; veins (3)5, unbranched, only midrib proximally slightly prominent; glands linear, distally punctiform. *Petals* bright yellow to orange-yellow, sometimes (?) tinged red in bud, 2·5–7 × 1–2 mm, 1–1·2 × sepals, oblanceolate to narrowly oblong; apiculus obsolete; glands absent. *Stamens* 10–13, 3-fascicled (or irregular?), longest 1·8–3·5 mm long, 0·4–0·6 × petals. *Ovary* 1·3–2 × 0·8–1 mm, ellipsoid to ovoid; styles 3, (0·5–)0·8–1·2(–1·6) mm long, 0·4–0·6 × ovary, divergent; stigmas broadly capitate. *Capsule* 5–8 × 1·7–3·5 mm, narrowly ellipsoid to narrowly cylindric, 1·6–2·1 × sepals. *Seeds* 0·5–0·7 mm long; testa finely linear-reticulate.

Dry or moist, open habitats (grassland, among rocks or gravel, scrub); (1700–) 2400–4200 m.

Colombia (Cundinamarca, Valle de Cauca), Ecuador, Peru (Huánco and Ancash to Puño), Bolivia (La Paz, Cochabamba, Tarija), Argentina (Jujuy, Salta).

COLOMBIA. Cundinamarca: al S. de la Sabana de

Bogotá, entre la Picota y Usmé, 2560 m, 4 August 1950 (fl), *Idrobo* 441 (COL); between Sisga and Macheta, 2800 m, 3 September 1983 (fl & fr), *Wood* 3961. Valle de Cauca: Hoya del río Bugalagrande, Loma de Barragán, desde La Parilla a la Manchuca, 2750–2660 m, 14 April 1946 (fl & fr), *Cuatrecasas* 20730 (BM, P, US).

ECUADOR. Imbabura: Mojanda, ± 10 km SSW. of Otavalo, 2900–3150 m, 12 December 1966 (fr), *Sparre* 13487 (S). Pichincha: just W. of Quito, Lloa valley above Lloa, *c.* 3000 m, 2 February 1981 (fl), *Balslev* 1889 (BM, NY); Aloag to Santo Domingo, *c.* 4 km W. of Aloag, Quebrada Violetas, 3000 m, 25 March 1967 (fl), *Sparre* 14983 (S). *Cotopaxi*: Vulcán Cotopaxi, 3100 m, 18 September – (fr), *Hirsch* E305 (NY); Páramo de Apagua entre Zumbagua y Pilaló, below Apagua, *c.* 3920 m, 18–19 July 1959 (fr), *Barclay & Juajibioy* 8102 (MO). Bolívar: Hacienda Talahua, 3300 m, 30 April 1939 (fl & fr), *Penland* 574 (F, GH). Tungarahua: Tungarahua, January 1859 (fl & fr), *Spruce* 5880 (BM, C, G, GH, K, MO, P, S, W). Cañar: Virgin Corral, 4 km SW. of Taday, 3000 m, 13 December 1980 (fl & fr), *Holm-Nielsen, Jaramillo & Coello* 29292 (AAU). Azuay: Río Mihuir, *c.* 1 km below Misir on road Cuenca-Molleturo, 3400 m, 8 March 1985 (fl & fr), *Harling & Anderson* 22957 (BM, GB); 1–8 km N. of village of Sevilla de Oro, 2400–2700 m, 27 July–12 August 1945 (fl), *Camp* E 4594 (NY).

PERU. Ancash: Huaylas Prov., Huascarán National Park, Paron Valley, 3760 m, 1 January 1985 (fl & fr), *Smith & Goodwin* 8934 (BM, MO n.v.); Huari Prov., Huascaran National park, S. side of Quebrada Carhuazcancha, 3970–4200 m, 6 May 1986 (fl & fr), *Smith* et al. 12282 (BM, MO n.v.). Huánuco: 24 km NE. of Huánuco, *c.* 3660 m, 12–22 June 1922 (fl & fr), *Macbride & Featherstone* 2175 (F, GH); Carpish, 2600–2700 m, 17 October 1957 (fl), *Ferreyra* 12792 (MO, NY). Junin: Huancayo Prov. & Distr., Huancayo to Chameseria, 3350 m, 30 April 1961 (fl), *Saunders* 636 (BM, MO). Huancavelica: Tayacaja, SE. of Pampas, 3300 m, 5 January 1939 (fr), *Stork & Horton* 10254 (F, G, K, UC n.v.). Ayacucho: Pampalca, between Huata and Río Apurímac, *c.* 3200 m, 4, 5, 18 May 1929 (fl), *Killip & Smith* 23266 (F). Apurímac: Andalhuaylas, 4 km S. of Chincheros, 3400 m, 28 January 1939 (fl & fr), *Stork & Horton* 10775 (F, G); Abancay, Cucahuasi, 3800 m, 25 February 1950 (fl & fr), *Vargas* 9208 (F). Cuzco: Valle de Urubamba, 2800 m, February 1932 (fl), *Herrera* 3388 (F, G); Colquipata, 3600–3800 m, 1 May 1925 (fr), *Pennell* 13764 (F). Puño: Juliaca, 3750 m, 7 January 1923 (fl), *Stafford* 460 (BM); Lampa, 4000 m, 2 April 1951 (fr), *Hirsch* P.662 (NY).

BOLIVIA. La Paz: viciniis Sorata, monticula Lorecasa, 2800–3200 m, October 1858–May 1859 (fl), *Mandon* 789 (BM, G, GH, K, MO, P, S, W, WIS); Prov. Sud Yungas, Unduavi, 4 km hacia Chulumani, 3000 m, 20 January 1983 (fl), *Beck* 8622 (BM, LPB n.v). Cochabamba: Sacaba, Camirro viejo, Incacha, 2500 m, 11 October 1921 (fl), *Steinbach* 5854 (F, GH, K, MO); Prov. Ayopaya, Independencia, 2800 m, 29 November 1981 (fl), *Beck* 7462 (BM, LPB). Tarija: La Merced bei Bermejo, 22 November 1903 (fl), *Fiebrig* 3182 (F, GH, S, U, W, Z); Talca Chugiaguillo, April 1890 (fr), *Bang* 810 (BM, F, GH, K, MICH, MO, W).

ARGENTINA. Jujuy: Dept. Tumbaya, Volcán Abra Morada, 3200 m, 10 March 1967 (fl), *Cabrera* 18378 (P). Salta: Dept. Santa Victoria, road from La Quiaca to Santa Victoria, 16·7 km from Santa Victoria, 3500 m, 13 June 1966 (fl & fr), *Hawkes, Hjerting & Rahn* 3827 (BM p.p., WIS p.p.).

H. brevistylum seems to be directly related to *H. killipii* (E. Colombia). Only in Valle de Cauca is there evidence of a link with *H. thesiifolium* and that is in only a part of *Cuatrecasas* 20730 that has longer and narrower leaves than usual. Otherwise *H. thesiifolium* and *H. brevistylum* remain distinct and therefore merit specific distinction.

The type material of *H. brevistylum* in Herb. De Candolle comprises two collections mounted on one sheet: (i) 'Hypericum p. nova Amer. merid.' [with 'M.B. Delessert – 1826' added in another hand]; (ii) 'Hypericum-Concepcion du chili – Mons. D'Urville'. (i) is the plant illustrated by Choisy (1821) when describing *H. brevistylum*; it belongs to the Cordilleran species described by Gleason (1929) as *H. punense*, and was probably collected in Peru, possibly by Dombey; (ii) is the Chilean species usually known as *H. caespitosum* Cham. & Schlechtendal. Without giving any reasons, Rodríguez Jiménez (1973) made specimen (ii) the lectotype, so that *H. brevistylum* (1821) supplanted *H. caespitosum* (1828) as the name of the central Chilean species. The following considerations, however, indicate that Choisy's description was based wholly on specimen (i):

i) The leaves are 'oblong-lanceolata subobtusis', not linear, rounded.
ii) The corolla is 'calyce paulo longior', not 1·5–2 times as long.
iii) The capsule, although described as 'calyce paulo longior' is illustrated as almost twice as long.
iv) The provenance 'In America meridionali'.

In addition, Keller gives the provenance of *H. brevistylum* as 'Peru' (1893) or 'Peru und Bolivie' (1925), thus in effect omitting specimen (ii). For all these reasons it seems necessary to replace (ii) by (i) as lectotype of *H. brevistylum*.

32. **Hypericum pauciflorum** Kunth in Humb., Bonpl. & Kunth, *Nov. gen. sp. p.* **5**: 192 (1822); S. Watson in *Proc. Am. acad. Arts Sci.* **17**: 330 (1882), pro parte; Urbina, *Cat. pl. mexic*: 19 (1897); Rodríguez Jiménez in *C.r. Soc. Biogéogr.* **432**: 90, map 9 (1972), in *Mems Soc. Cienc. nat. La Salle* **33**: 102, ff. 2a, 3a, 11E (1973), pro parte, excl. subsp. *involutum* et syn. *H. paucifolium* et *H. schaffneri*. Type: Mexico, Guanajuato, 'inter Santa Rosa et Guanaxuato', 1980–2700 m, September 1803 (fl & fr), *Humboldt & Bonpland* (P-HUM!-holotype).

Map 29.

H. canadense sensu Choisy in DC., *Prodr.* **1**: 550 (1824), pro parte, quoad syn. *H. pauciflorum*, non L. (1753).

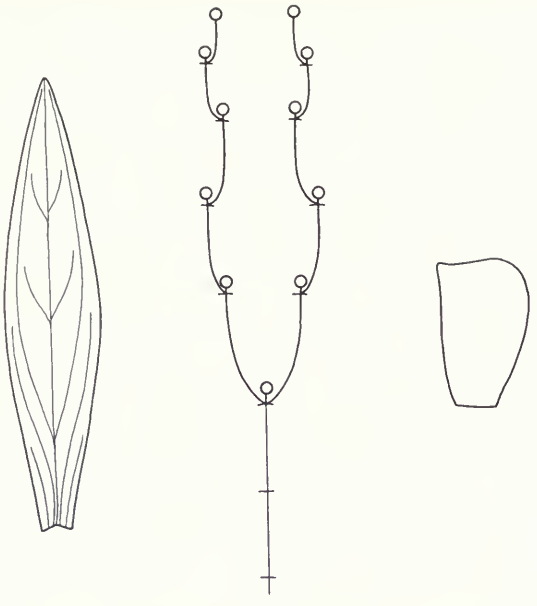
H. cervantesii Willd. ex Sprengel, *Syst. veg.* **3**: 347 (1826); D. Dietr., *Syn. pl.* **4**: 1237 (1847). Type: Mexico, without precise locality, n.d. (fr), *Cervantes* in Herb. Willd. 14437 (B-WILLD-holotype, microfiche!.)[11]

Brathys pauciflora (Kunth) Spach in *Annls Sci. nat.* (Bot.) II, **5**: 367 (1836).

Sarothra pauciflora (Kunth) Raf., *Fl. tellur.* **3**: 79 (1837), comb. invalid. (Art. 33).

Hypericum canadense var. *majus* sensu R. Keller in *Bull. Herb. Boissier* II, **8**: 188 (1908), pro parte, quoad syn. *H. pauciflorum*.

[11]The identification of *H. cervantesii* from the microfiche is not absolutely certain. The specimen is rather poor and could just possibly belong to *H. paucifolium*. As it would be the earliest name for that species, I have thought it best to place it here, where it is a later synonym.



H. diffusum sensu Rodríguez Jiménez in *Mems Soc. Cienc. nat. La Salle* **33**: 117 (1973), pro parte excl. typum.

Icon: Rodríguez Jiménez in *Mems Soc. Cienc. nat. La Salle* **33**: 50, f. 11C (1973).

Subshrub or perennial herb 0·15–0·6 m tall, erect or decumbent and branching at the base but not rooting. *Stems* green, 4-angled, not ancipitous; internodes 2 (lower)–50 (upper) mm long, lengthening markedly upwards and then exceeding leaves. *Leaves* sessile, spreading from base (lower) to erect (upper), not tetrastichous, persistent; lamina 10–30 × 1–8 mm, linear to narrowly or relatively broader oblong or (lower) oblanceolate, plane or recurved, not cucullate, midrib prominent and smooth or sometimes scabrid beneath, concolorous, ± densely glaucous, subcoriaceous; apex obtuse or rounded to acute, margin entire or usually ± scabrid-denticulate, base cuneate to parallel-sided, not sheathing, free; basal veins (5)3–1, without or with 1–3 pairs of ascending midrib branches, tertiary reticulation not visible; laminar glands dense, punctiform or slightly elongate, not prominent. *Inflorescence* 1–22-flowered, terminal, branching usually monochasial above first (dichasial) node or wholly monochasial, very rarely with 1–2 flowering branches from node below; pedicels 2–6 mm long, not or scarcely incrassate; bracts linear-lanceolate occasionally with margin scabrid-denticulate. *Flowers* (12)15–20 mm in diam., stellate. *Sepals* 5–7 × 1·5–2 mm, subequal, imbricate, oblong-elliptic to lanceolate, acute, occasionally scabrid; veins 5, unbranched or 3 branched, becoming prominent. *Petals* palish yellow to golden- or orange-yellow, tinged or veined red outside, 8–10 × 4–5 mm, *c.* 1·5 × sepals, oblanceolate; apiculus acute; glands interrupted, distally absent. *Stamens c.* 30–40, longest 4–5 mm long, *c.* 0·5 × petals. *Ovary c.* 2 × 1 mm, narrowly ovoid-conic; styles 3(4), (2–)2·5–4 mm, long, (1)1·3–2 × ovary; stigmas broadly capitate. *Capsule* 6–8·5 × (2·5)3–4 mm, narrowly ovoid-conic to narrowly ovoid, exceeding sepals, without glandular vesicles. *Seeds* 0·6–0·8 mm long; testa finely linear-scalariform.

Open *Pinus* or *Quercus* forest, usually on steep rocky or grassy slopes; (800–) 1425–2850 m.

Mexico (central and western; Sinaloa south to Oaxaca).

MEXICO. Aguascalientes: Municipio San José de Gracia, 12 km S. of La Congoja, 2700 m, 16–17 October 1973 (fl & fr), *Rzedowski & McVaugh* 780 (MICH). Jalisco: above Amacueca, road to Tapalpa, 2100–2250 m, 2 November 1960 (fr), *McVaugh* 20662 (MICH); San Sebastian W. to Mascota, 1425 m, 7 January 1927 (fl), *Mexia* 1413 (BM, F, MICH, MO, NY). Michoacán: W. of Aguillila, 2000–2100 m, 15 September 1958 (fl & fr), *McVaugh* 17850 (MICH). Nayarit: *c.* 7–8 km N. of Compostela, near Km 31, 800–900 m, 22 September 1960 (fl & fr), *McVaugh* 19329 (MICH). Oaxaca: Oaxaca to Gualato de Juárez and Tuxtepec, 2300 m, 18 July 1968 (fl & fr), *W. & C. Anderson* 4821 (MICH). Sinaloa: Ocurahui, Sierra Surotato, *c.* 1800–2100 m, 1–10 September 1941 (fl), *Gentry* 6306 (GH, MICH, MO, NY). Zacatecas: *c.* 20 km W. toward Tlaltenango from road junction S. of Jalpa, 2300–2500 m, 22–23 December 1970 (fr), *McVaugh* 25598 (MICH).

H. pauciflorum is related both to 28. *H. relictum* and 29. *killipii* (Colombia) and to the *H. pratense* and *H. majus* groups of North and Central America (etc.) (Spp. 33–43). It is the most nearly shrubby species of all the Central American species, and is recognizable by the bluish-green coriaceous leaves (varying in width and scabridity, but at least the lower ones always spreading), the few-flowered inflorescence (1-noded, sometimes only one of the pair of monochasia developing), the brightly red-tinged buds, and the elongate capsule. The southernmost (Oaxaca) form shows a tendency towards rosette formation by extreme condensation of the lower stem-nodes. The Zacatecas specimen, on the other hand, shows extreme leaf and inflorescence reduction.

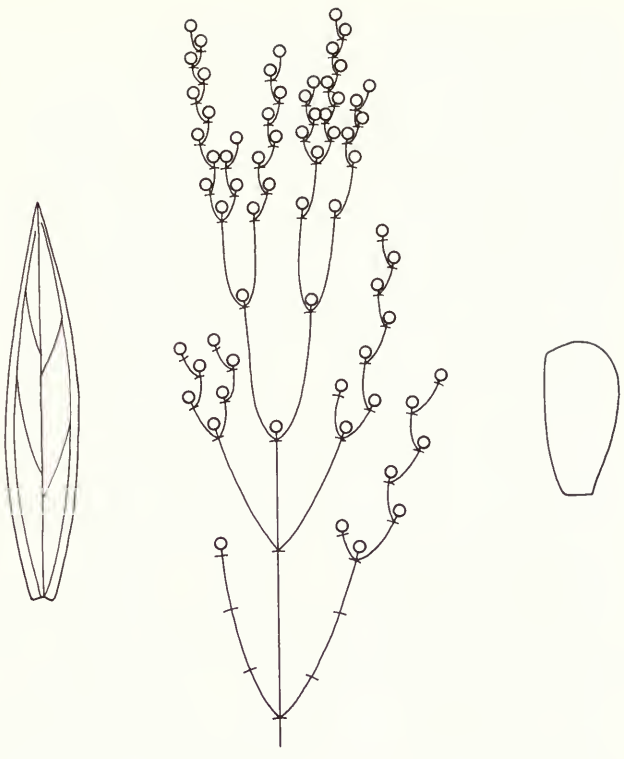
33. **Hypericum pratense** Cham. & Schlechtendal in *Linnaea* **5**: 218 (1828); Walp., *Repert. bot. syst.* **1**: 388 (1842); D. Dietr., *Syn. pl.* **4**: 1235 (1847); R. Keller in Engl. & Prantl, *Nat. Pflanzenfam.* 2nd ed. **21**: 183 (1925). Type: Mexico, Vera Cruz, prope Jalapam, 28 March 1830 (fl & fr), *Schiede & Deppe* 450 (HAL-holotype; BM!, M, MO!, W!-isotypes; P!-photograph).

Fig. 19B, C, Map 29.

H. uliginosum var. *pratense* (Cham. & Schlechtendal) R. Keller in *Bull. Herb. Boissier* II, **8**: 190 (1908).

H. uliginosum sensu Standley & Williams in *Fieldiana Bot.* **24**(7): 51 (1961).

Perennial or annual herb 0·1–0·8 m tall, erect from often ± woody, occasionally decumbent and rooting base, branching in upper half or more rarely at the base, with branches strict to ± widely spreading. *Stems* green to vinous red, 4-lined, the uppermost internode(s) ancipitous, with lines smooth; internodes 3 mm (lower) to 45 mm (upper) long, upper ones longer than leaves. *Leaves* sessile, spreading or sometimes appressed, not tetrastichous, persistent; lamina 7–30(–40) × 0·4–6·5(–7·5) mm, narrowly elliptic or narrowly oblong or narrowly lanceolate to linear, plane or margins ± recurved, not cucullate, midrib slightly prominent, smooth or rarely scaberulous beneath, paler or glaucous beneath, not otherwise glaucous, thickly to thinly chartaceous; apex obtuse to rounded or (when lamina very narrow) acute margin entire or rarely scaberulous, base parallel-sided to subcuneate, not sheathing, free; basal vein 1, unbranched or with 1–2 pairs of midrib branches, tertiary reticulation distal and rather obscure or absent; laminar glands dense, punctiform, not prominent. *Inflorescence* 5–17(–*c.* 54)-flowered, terminal,



branching monocasial after 1st or 2nd (or rarely 3rd) nodes, without or less usually with flowering branches from up to 3 nodes below, the whole system narrowly to broadly obconic; primary pedicels 2–6 mm long; bracts and bracteoles linear-subulate, entire. *Flowers* 6–15 mm in diam., stellate. *Sepals* 2·5–5 × 0·5–1·5 mm, unequal, not or scarcely imbricate, triangular-lanceolate to linear-oblong, acute, margin entire; veins 5, unbranched, not prominent. *Petals* golden yellow to orange, tinged or veined red outside, (3·5) 5–9 × (1–)2–4 mm, 1·4–1·8 × sepals, oblanceolate; apiculus obsolete; glands linear, distally striiform. *Stamens* 12–20, longest 3–6 mm long, 0·65–0·8 × petals. *Ovary* 1–2 × 0·7–1·3 mm, ovoid to ellipsoid; styles 3, 1·2(–3) mm long, 1–1·7 × ovary; stigmas broadly capitate. *Capsule* 5–8 × 2·5–4 mm, ovoid-cylindric to cylindric, subacute to rounded, exceeding sepals; valves without or with 3 glandular vesicles. *Seeds* 0·6 mm long; testa finely linear-scalariform.

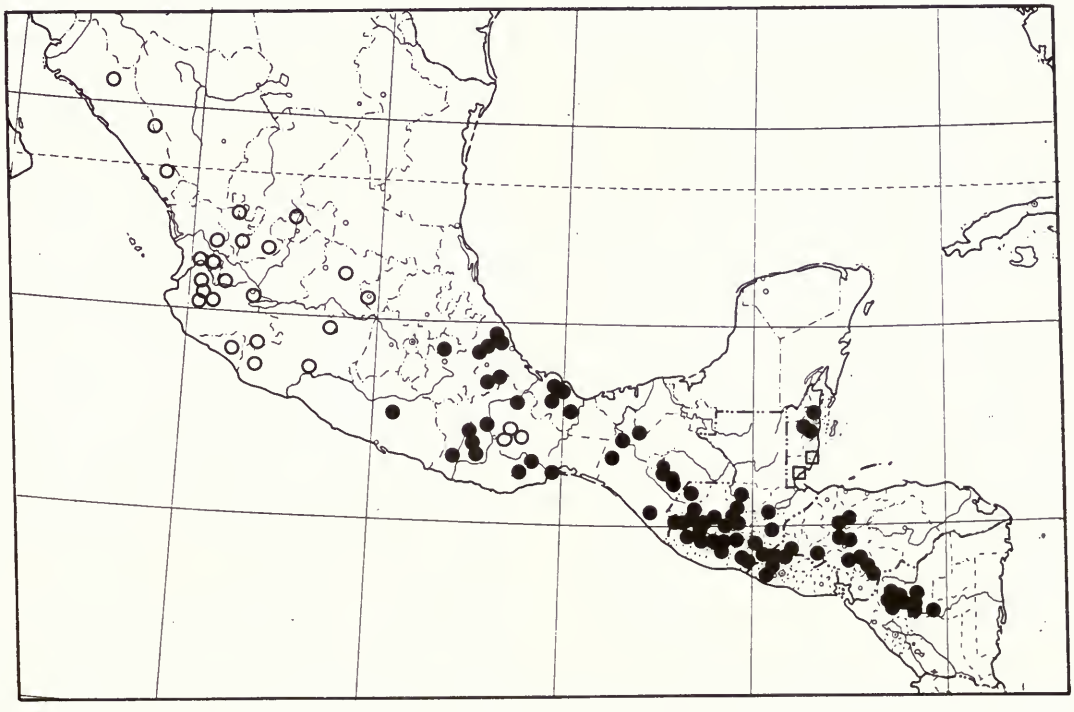
Open places in *Pinus* and/or *Quercus* forest or scrubby or grassy slopes in sandy or clay soils, dry or rather damp; sea level to 2850 m.

Southern Mexico (Guerrero, southern Veracruz, Oaxaca, Chiapas), Belize, Guatemala, El Salvador, Honduras Republic, Nicaragua.

MEXICO. Guerrero: Sierra Madre del Sur, Milpillas to Atoyac via Puerto de Gallo, *c.* 107 km NE. of Atoyac, *c.* 21 km NE. of Puerto de Gallo, *c.* 2850 m, 18 October 1975 (fl & fr), *Reveal* et al. 4311 (NY). Veracruz: Zacuapan, June 1907 (fr), *Purpus* 2418 (BM, F, GH, MO, P, US); near Jalapa, 1200 m, 13 May 1980 (fl & fr), *Pringle* 8343 (BM, C, K, MEXU, MICH, MO, NY, P, US, W); Municipio Xico, Puente Acabaloya, 1600 m, 31 March 1983 (fl & fr), *Nee & Taylor* 26324 (BM, F, n.v.). Oaxaca: Tehuantepec, n.d. (fl & fr), *Orcutt* s.n. (MO). Chiapas: without precise locality, n.d. (fl & fr), *Ghiesbrecht* 635 (BM, GH, K, MO, NY); Tenejapa, paraje of Sibanil Ha', Pokolum, 1530 m, 10 July 1964 (fl & fr), *Breedlove* 6105 (BM); Puebla Nuevo Solistahuacán, 12 October 1949 (fl & fr), *Miranda* 5651 (MEXU).

BELIZE. Belize: Belize R., Isabella Pine Ridge, 13 June 1933 (fl & fr), *Lundell* 4136 (F); Boomtown, 13 September 1936 (fr), *O'Neill* 8774 (C, DUKE, F, MICH, NY, US); 32 km from Belize by Northern Road, 3–12 m, 29 November 1968 (fl & fr), *Proctor* 29527 (BM, IJ).

GUATEMALA. Alta Verapaz: Coban, 1350 m, August 1907 (fl), *v. Turkheim* II 1249 (BM, C, F, GH, MO, NY, W). Baja Verapaz: Sierra de la Minas, *c.* 15 km N. of Salamá,



Map 29 Sect. 30: 32. *H. pauciflorum* ○; 33. *H. pratense* ●; 35. *H. aphyllum* □.

Fig. 19 A. *H. philonotis*: (a) habit; (b) stem with leaf; (c) sepal; (d) petal; (e) capsule. B. *H. pratense*: (f, g) habit. C. *H. aphyllum*: (h) habit (a, f–h × ½; b × 2; c–e × 6). A. *Balls* 5380. B. (f) *Rohweder* 3076; (g) *Steyermark* 29759. C. *Gentle* 4175.

1600–1800 m, 5 January 1973 (fr), *Williams, Molino & Williams* 42172 (F, NY). Chimaltenango: Barranco de La Sierra, SE. of Patzúm, *c.* 2100 m, 31 December 1938 (fl), *Standley* 61118 (F). Chiquimula: Montaña Norte – El Jutal, Cerro Brujo, SE. of Concepción de las Minas, 1700–2000 m, 2 November 1939 (fr), *Steyermark* 31080 (F). El Quiché: Pascual Abaj, Chichicastenango, 2300 m, 1 November 1965 (fl & fr), *Molina* 153315 (F, U) Guatemala: Volcán de Pacaya, above Las Calderas, 1800–2400 m, 30 November 1938 (fl & fr), *Standley* 57327 (F, NY). Huehuetenango: Municipio San Mateo Ixtatán, 6·5 km E. of San Mateo Ixtatán towards Barillas, 2550 m, 7 July 1965 (fr), *Breedlove* 11624 (F); Sierra de los Cuchumatanes, 3400–3500 m, 7 July 1942 (fl), *Steyermark* 48396 (F). Jutiapa: Los Llanitos, near San José Acatempa, *c.* 1200 m, 21 December 1938 (fr), *Standley* 60600 (F, MICH). Quezaltenango: Cerro Quemado, 1906 (fr), *Skutch* 512 (MICH, US). Sacatepéquez: highway to Antigua, Km 32, 1700 m, 26 November 1969 (fl & fr), *A. & A. R. Molina* 24824 (F, MO, NY). San Marcos: Finca Armenia, San Rafael píe de la Cuesta, *c.* 1300 m, 7 August 1980, *Dwyer* 15204 (BM, MO n.v.). Santa Rosa: Casillas, 1200 m, September 1892 (fl), *Donnell Smith* 3944 (US). Sololá: 3·8 km E. of Panajachel, 1·7 km W. of San Andrés above Lago de Atitlán, 1920 m, 2 January 1973 (fr), *Almeda & Luteyn* 1726 (DUKE). Totonicapán: Cerro Maria Tecum, 10·20 km E. of Totonicapan, 2800–3000 m, 16 December 1962 (fl & fr), *Williams, Molina & Williams* 23122 (F, NY). Zacapa: Sierra de las Minas, below Finca Alejandria, 1700–2000 m, 12 October 1939 (fl & fr), *Steyermark* 29759 (F).

EL SALVADOR. Ahuachapán: Sierra de Apaneca, vicinity of Apaneca, 1400–1600 m, 24 January 1947 (fr), *Standley & Padilla* 2980 (F). Chalatenango: Los Escamiles, 2160 m, 12 March 1942 (fl), *Tucker* 1026 (F, K, MICH, NY, P, US). Santa Ana: Cordillera Miramundi, El Tripinio, 2000–2200 m, 27–31 January 1966 (fr), *Molina, Burger & Wallenta* 16818 (F, US, W).

HONDURAS. Comayagua: above plains of Siguatepeque, near El Achate, 1350 m, 19 July 1936 (fl & fr), *Yuncker, Dawson & Youse* 5971 (F). Distrito Central: El Hatillo, 1800 m, 1 August 1975 (fl & fr), *Vargas & Barkley* 38 (MO). El Paraiso: Cumbre NW. of Guïnope, 1380 m, 5 January 1947 (fl & fr), *Standley* et al. 1994 (F). Intibuca: Yamaranguila, 2000 m, 7 April 1956 (fl), *Molina* 6322 (F, US). Lempira: Montaña Puca, between Guatán and Cuábanos, 1600 m, 25 September 1963 (fl & fr), *Molina* 12917 (F, NY). Morazán: Montana, Uyuca, La Labranza, 1700 m, 19 July 1963 (fl), *Molina* 12782 (F, NY). Ocotepeque: vicinity of El Portillo, Merendón, 2000 m, 31 August 1975 (fl), *A. & A. R. Molina* 30923 (MO).

NICARAGUA. Estalí: N. slope of Cerro El Fraile, 1160–1200 m, 28 September 1980 (fr), *Stevens* 18029 (BM, MO). Jinotega: SW. of Jinotega road to La Cantera, 1050–1355 m, 26 June 1947 (fl & fr), *Standley* 10121 (F). León: camino a San Nicolás, 1100–1200 m, La Guayaba, *c.* 1300 m, 15 October 1982 (fl & fr), *Moreno* 17787 (MO). Matagalpa: 10 km al NW. de Matagalpa, carretera al Tuma, *c.* 1000 m, 5 August 1981 (fr), *Moreno* 10286 (BM, MO, n.v.). Nueva Segovia: Loas Planes, 16 September 1985 (fl & fr), *Moreno* 26414 (MO).

H. pratense and *H. thesiifolium* approach one another very closely, both morphologically and geographically, the gap between their distributional areas consisting only of the lower-lying land between central Nicaragua and central Costa Rica. Morphologically, southward the reduction trend in *H. pratense* ends with small unbranched annuals with only a terminal inflorescence comprising a single pair of monochasial branches. (It is not far from this form to the extreme reduction of *H. aphyllum*.) In the extreme form of *H. thesiifolium* in Costa Rica the (usually punctate) leaf glands have coalesced to form streaks or lines. For differences between these species see the key (p. 50).

H. pratense has been much confused with *H. moranense* as well as with *H. thesiifolium*, but it differs from the former species in its often woody single stem and annual habit, usually obtuse to rounded leaves, longer styles, and narrowly ovoid to ellipsoid capsule. It seems to have given rise to 34. *H. philonotis* (q.v.), which, like *H. moranense*, has a distribution that overlaps that of *H. pratense*.

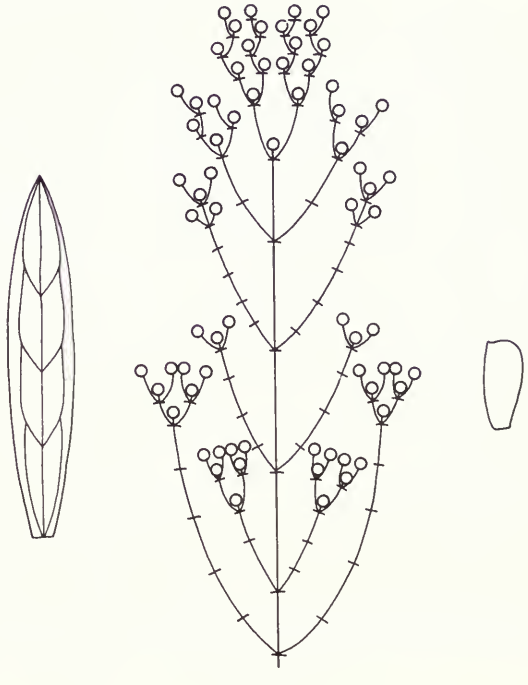
34. **Hypericum philonotis** Cham. & Schlechtendal in *Linnaea* **5**: 219 (1830); Walp., *Repert. bot. syst.* **1**: 388 (1842); D. Dietr., *Syn. pl.* **4**: 1235 (1847). Type: Mexico, Vera Cruz near Jalapa, August 1828 (fl & fr), *Schiede & Deppe* 451 (HAL-holotype; P!-isotype).

Fig. 19A, Map 30.

H. paniculatum Kunth in Humb., Bonpl. & Kunth, *Nov. gen. sp.* **5**: 195, t.459 (1822); Sprengel, *Syst. veg.* **3**: 364 (1826); R. Keller in *Bull. Herb. Boissier* II, **8**: 180 (1908), in Engl. & Prantl, *Nat. Pflanzenfam.* 2nd ed. **21**: 183 (1925); Rodríguez Jiménez in *C.r. Soc. Biogéogr.* **432**: 90, map 5 (1972), in *Mems Soc. Cienc. nat. La Salle* **33**: 62, ff. 1a, 2g, 3c, 11A, t.2A (1973); non Lam. (1797). Type: Mexico, Michoacán, prope Ario, inter Pazcuaro et Plaga [Las Playas] de Jorullo, 1782 m, September 1803 (fl), *Humboldt & Bonpland* (P!-holotype).

H. indecorum var. *paniculatum* (Kunth) Choisy in DC., *Prodr.* **1**: 550 (1824).

H. uliginosum var. *nigropunctatum* R. Keller in *Bull. Herb. Boissier* **6**: 264 (1898), ['*nigro-punctatum*'] pro parte, quoad syntypum. Type: Mexico, Oaxaca, Chiantla, May 1841 (fl), *Liebmann* 12 (C!-syntype, P!-photograph). For lectotype, see 30. *H. thesiifolium*.



H. submontanum Rose in *Contr. U.S. natn. Herb.* **10**: 125 (1906); R. Keller in Engl. & Prantl, *Nat. Pflanzenfam.* 2nd ed. **21**: 181 (1925); Sanchez, *Fl. Valle de México*: 260, f. 197 D (1969). Type: Mexico, Distr. Federal, Sierra Ajusco, 2400 m, 3 October 1896 (fl), *Pringle* 6527 (US!-holotype; BM!, BR, ENCB, F!, GH!, GOET, MEXU!, MICH, MO!, NY!, P!, W!-isotypes).

Icon: Humb., Bonpl. & Kunth, *Nov. gen. sp.* **5**: 459 (1822).

Annual herb 0·1–0·56 m tall, erect, often from decumbent, branching, and rooting base, otherwise unbranched below inflorescence. *Stems* green to reddish, 4-angled, the uppermost internodes ± ancipitous, with lines smooth; internodes 2 mm (lower)–25 mm (upper) long, the upper exceeding leaves. *Leaves* sessile, spreading or rarely erect, not tetrastichous, persistent; lamina 6–34 × 1·5–7 mm, narrowly elliptic or narrowly oblong to (lower) oblanceolate, plane, not cucullate, midrib slightly prominent, smooth, paler beneath, not glaucous, ± thinly chartaceous; apex acute to rounded, margin entire, base narrowly cuneate, not sheathing, free; basal or near-basal veins 1(3–5), sometimes with 1–2 midrib branches, tertiary reticulation dense; laminar glands dense, punctiform, not prominent. *Inflorescence* 5–*c.* 30-flowered, terminal, branching monochasial above 1st or 2nd node, usually with pairs of flowering branches from up to 12 nodes below, the whole system then narrowly pyramidal; primary pedicels 1–4·5 mm long; upper leaves and bracts linear-subulate, entire. *Flowers* 5–8 mm in diam., stellate. *Sepals* 1·5–4(–5·2) × 0·3–0·7(–10) mm, unequal, not imbricate, narrowly oblong to narrowly lanceolate, acute, margin entire; veins 3, unbranched, not prominent. *Petals* golden yellow to orange, tinged or veined red outside, 2·5–5 × 0·7–1·5 mm, *c.* 1·3–1·6 × sepals, oblanceolate to narrowly oblong; apiculus subacute; glands linear, distally striiform. *Stamens* 5–7, longest 1·5–3 mm long, *c.* 0·6–0·7 × petals. *Ovary* 1·5 × 1 mm, narrowly ellipsoid; styles 3, 0·6–0·8 mm long, *c.* 0·5 × ovary; stigmas broadly capitate. *Capsule* 4·5–6 (6·5) × 1·5–2·5 mm, narrowly cylindric-ellipsoid to narrowly cylindric, subacute, exceeding sepals; valves sometimes with 1–2 circular glandular vesicles. *Seeds* 0·5 mm long; testa finely linear-scalariform.

Pinus and *Pinus-Quercus* forest, roadsides, cultivated land, often in damp habitats especially in the south of its range; 1500–3200 m.

Mexico (Jalisco, Michoacán, México, Morelos, Guerrero, Puebla, and Hidalgo, southern Veracruz and Oaxaca), Guatemala (Huehuetenango, Quezaltenango), Honduras (Morazán).

MEXICO. Distrito Federal: near Contreras, 2520 m, 12 November 1944 (fl), *Sharp* 441627 (GH). Guerrero: Sierra Madre del Sur, Milpillas-Atoyac road via Puerto de Gallo, *c.* 88 km SW. of Mexican Hwy 95, 17 October 1975 (fl & fr), *Reveal* et al. 4274 (NY). Hidalgo: Honey Station, 1740 m, 29 July 1904 (fl), *Pringle* 11931 (BM, C, F, GH, K, MEXU, MO, NY, P, U, US, W). Jalisco: Sierra del Tigre, 5 km S. of Mazamitla, 2100–2200 m, 17 September 1952 (fl), *McVaugh* 12983 (MICH). México: Temascaltepec, El Crucero, 2830 m, 13 June 1932 (fl & fr), *Hinton* 864 (BM, GH, K, MEXU, US). Michoacán: E. of San Juan Nuevo, *c.* 1830 m, 11–15 October 1961 (fl & fr), *King & Soderstrom* 4708 (MICH, NY, US). Morelos: near El Parque, 15 August 1906 (fl), *J. N. & J. S. Rose* 11109 (BM, NY, P, US). Oaxaca: Teotitlán del Camino to Huatla de Jiménez, 32·8 km, 2200 m, 12 July 1968 (fl), *W. R. & C. Anderson* 4710 (MICH, P). Puebla: near Tihuatlán, 18 September 1945 (fr), *Alexander* 1749 (NY). Tlaxcala: Municipio of Texcoco. San Pablo Ixyoc, 21 June 1981 (fr), *Hahn* 557 (MO). Veracruz: vicinity of Orizaba valley NW. of La Perla, 2000 m, 26 September 1968 (fl & fr), *Weaver* 1726 (DUKE); municipio de Jalacingo, Allende, 1720 m, 3 June 1972 (fl), *Ventura* 5454 (F, MICH).

GUATEMALA. Huehuetenango: Sierra de los Chuchumatanes, municipio of San Mateo Ixtatán, near Kurus Lemun, 6·5 km E. of San Mateo Ixtatán on Barillas road, 2550 m, 7 August 1965 (fl), *Breedlove* 11624 (DS n.v, F). Quezaltenango: summit of Sierra Madre Mts., *c.* 15 km N. of

Map 30 Sect. 30: 30. *H. thesiifolium* (part, see also Map 28, p. 98) ○; 34. *H. philonotis* ●.

Ostuncalco, 3000 m, 12 September 1963 (fl & fr), *Williams, Molina & Williams* 25551 (F).

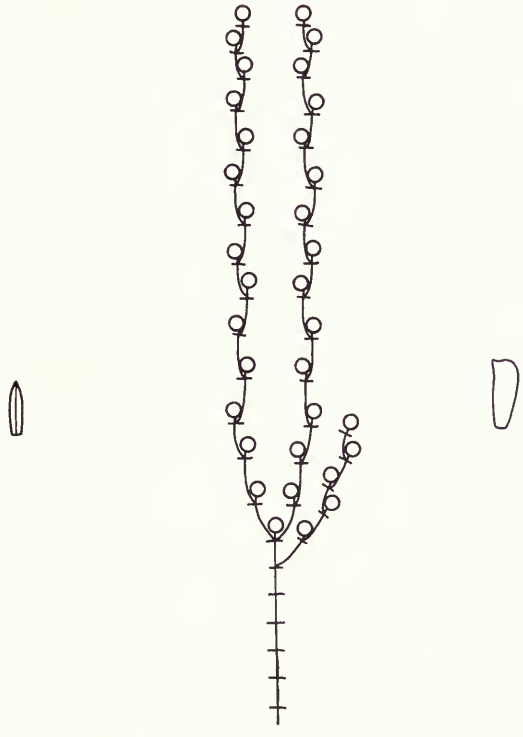
HONDURAS. Morazán: mountain above El Jicarito, road to Tatumbla, base of Cerro de Uyuca, 1500 m, 30 October 1951 (fl), *Standley* 29123 (F).

H. philonotis is apparently derived from *H. pratense*, from which it differs by the larger leaves with cuneate base and the smaller flowers with shorter styles and narrower, cylindric capsules. The most primitive form is in Oaxaca.

The Guatemalan and Honduran specimens are more reduced than the Mexican ones, except for *Venturi* 5454 (Veracruz). All these have small leaves and a simple reduced inflorescence.

35. **Hypericum aphyllum** Lundell in *Am. Midl. Nat.* **29**: 477 (1943); Standley & Williams in *Fieldiana Bot.* **24**(7): 48 (1961); P. Adams in *Rhodora* **64**: 235 (1962). Type: Belize, Toledo Distr., Monkey River, near Jenkins Creek, 26 September 1942 (fr), *Gentle* 4175 (MICH!-holotype; GH!, NY!-isotypes).

Fig. 19D, Map 29.



Sarothra aphylla (Lundell) Lundell in *Wrightia* **1**: 58 (1945).
Hypericum gentianoides sensu Rodríguez Jiménez in *C. r. Soc. Biogéogr.* **432**: 89, map 2 (1972), in *Mems Soc. Cienc. nat. La Salle* **33**: 112 (1973); D. H. Webb, *Biosyst. Study Hypericum sect. Spachium in eastern N. Am.*: 137 (1980), pro parte omnes quoad syn. *H. aphyllum* et *Sarothra aphylla*. et spec. ex Belize.

Annual herb 0·4–0·65 m tall, erect, slender, with few short lateral branches. *Stems* green, 4-angled, the uppermost nodes ± ancipitous, with lines smooth; internodes 2 mm (lower)–12 mm (upper) long, exceeding leaves. *Leaves* sessile, appressed to outcurving, not tetrastichous, persistent; lamina 1–2·7 × 0·3–0·5 mm, triangular-subulate to linear-subulate, incurved, not cucullate, midrib not prominent, concolorous, not glaucous, scale-like; apex acicular, margin entire, base slightly expanded, not sheathing, free, basal vein 1, unbranched; laminar glands dense, punctiform, not prominent. *Inflorescence* *c.* 20–50-flowered, terminal, branching monochasial after first node, sometimes with one monochasial branch from node immediately below; all pedicels *c.* 1 mm long, flower appressed; bracts as leaves but smaller. *Flowers* *c.* 6–7 mm in diam., stellate. *Sepals* 1·5–2 × 0·3–0·5 mm, equal, not imbricate, narrowly triangular-subulate to linear-subulate, acute, margin entire; vein 1, unbranched, becoming prominent. *Petals* golden (?) yellow, tinged red outside, 2·5–3 × (?)0·5–1 mm, *c.* 1·5–1·7 × sepals, linear; apiculus and glands not seen. *Stamens* 5–6, *c.* 2–2·5 mm long, *c.* 0·8 × petals. *Ovary* *c.* 1 × 0·3 mm, fusiform; styles 3, 1 mm long, about equalling ovary; stigmas narrowly capitate. *Capsule* 3–5 × 1·3 mm, fusiform or very narrowly cylindric, acute, exceeding sepals; valves sometimes with 1–2 glandular vesicles. *Seeds* 0·3–0·4 mm long; testa very finely linear-scalariform (almost smooth).

Open *Pinus* woodland; lowland.

Belize (Toledo, Stann Creek).

BELIZE. Stann Creek, near Mango Creek, 11 February 1960 (fl & fr), *Hunt* 365 (K, US). Toledo: see type.

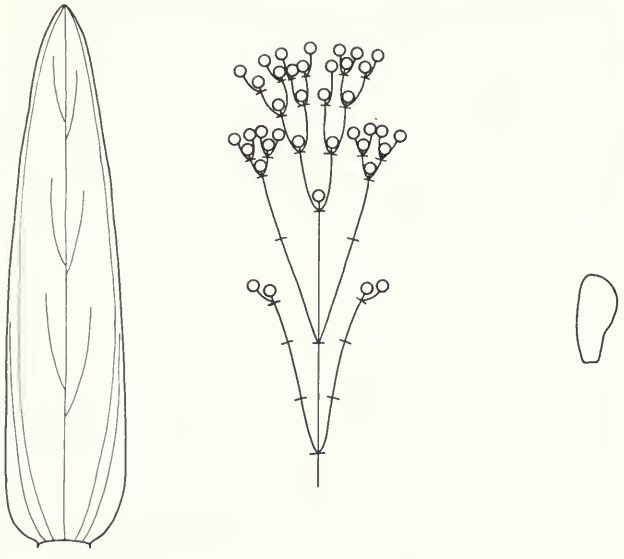
Standley & Williams, Adams, Rodríguez Jiménez, and Webb all compare *H. aphyllum* with *H. gentianoides*, which has similarly reduced leaves and elongate capsules. As Lundell had already pointed out, however, the seeds of *H. aphyllum* are fewer, shorter, and smoother than those of *H. gentianoides*. Despite these differences, and the completely different type of branching and habit (*H. aphyllum* is an unbranched annual herb, *H. gentianoides* a much-branched wiry 'annual shrublet'), Adams questioned the distinctness of these taxa, and the other authors reduced *H. aphyllum* to synonymy.

In fact, *H. aphyllum* is related to *H. pratense*, specifically to the little-branched form with small leaves, a similarly elongate inflorescence, and small flowers that occurs in Honduras and Nicaragua. It is smaller in all its parts but clearly continues the morphological trends from the more typical form of *H. pratense*.

36. **Hypericum majus** (A. Gray) Britton in *Mem. Torrey bot. Club* **5**: 225 (1894); Britton & A. Brown, *Ill. fl. n. U.S.* **2**: 435, f. 2460 (1897); Farw., *Ann. Rep. Comm. Parks & Boulev. Detroit* **11**: 75 (1900); Fern., *Gray's Man. Bot.* 8th ed.: 1013, f, 1320 (1950); Gillespie in *Castanea* **24**: 30 (1959); Heine in *Bauhinia* **2**: 71 (1962); N. Robson in Tutin et al., *Fl. europaea* **2**: 269 (1968); Utech & Iltis in *Trans. Wis. Acad. Sci. Arts Lett.* **58**: 343, f. 5 (1970); Rodríguez Jiménez in *C. r. Soc. Biogéogr.* **432**: 87, map 1 (1972), in *Mems Soc. Cienc. nat. La Salle* **33**: 85, f. 12A, t. 3A (1973); D. H. Webb, *Biosyst. Study Hypericum sect. Spachium in eastern N. Am.*: 258 (1980); J. M. Gillett & N. Robson in *Publs Bot. natn. Mus. nat. Sci. Can.* No. 11: 17, tt. 8 and 16, figs 7–8, map 6 (1981); Nezadal in *Ber. bayer. bot. Ges.* **55**: 67 (1984). Type: U.S.A.?, Lake Superior, no date (fl), *Robbins* 31c (GH!-holotype). Webb pointed out that a note in Britton's paper (1894) attributes the Hypericaceae account to Rusby.

Fig. 20A, Maps 31, 38, 39.

H. canadense var. *majus* A. Gray, *Manual* 5th ed.: 86 (1867) ['*major*']; Coulter in *Bot. Gaz.* **11**: 110 (1886); Britton in



Bull. Torrey bot. Club **17**: 311 (1890); R. Keller in *Bull. Herb. Boissier* II, **8**: 188 (1908), pro parte, excl. syn. Mex. et Amer. austr.

H. mutilum var. *longifolium* R. Keller in *Bull. Herb. Boissier* II, **8**: 184 (1908). Type: U.S.A., Wisconsin, Dane Co., Albion, *Kumlein* 113 (G-lectotype, D. H. Webb, 1980; FR!, GOET, P-isotypes).

Sarothra major (A. Gray) Y. Kimura in Nakai & Honda, *Nova fl. jap.* **10**: 232 (1951).

Hypericum blackstonioides Obern. in *Jsber. Hum. Gymnasiums Weiden/Opf* **1950/51**: 44, 79 (1951); Merxm. & Vollr. in *Ber. bayer. bot. Ges.* **31**: 130 (1956), nom. nud.

H. canadense sensu Bouchard in *Bull. Soc. bot. Fr.* **101**: 351 (1954).

Icon: J. M. Gillett & N. Robson in *Publs Bot. natn. Mus. nat. Sci. Can.*, No. 11: 20, t. 8 (1981).

Perennial herb 0·05–0·6(–0·7) m tall, erect, with stems few or solitary, without or with few branches, not rooting, with taproot. *Stems* green, 4-angled, scarcely ancipitous above; internodes 10–40 mm long; the upper usually exceeding leaves. *Leaves* sessile to subamplexicaul (upper), erect or ± spreading, not tetrastichous, persistent; lamina (10–)15–40(–45) × (2–)6–12 mm, lanceolate to narrowly oblong-elliptic in smaller plants or (lower) oblanceolate, plane, not cucullate, midrib prominent beneath, smooth, concolorous, not glaucous, chartaceous; apex acute to rounded, margin entire, base narrowly cuneate to subcordate, not sheathing, free; basal or near-basal veins (3)5–7, with less prominent ascending midrib branches, tertiary reticulation dense; laminar glands dense, punctiform, not prominent. *Inflorescence* 3–*c.* 30-flowered, terminal, branching regularly dichasial, with ascending pairs of flowering branches from up to 5 nodes below, the whole compactly corymbiform to cylindric; pedicels 3–5 mm long; uppermost leaves and bracts subulate, entire. *Flowers* 6–7 mm in diam., stellate. *Sepals* (3·5–)4–6·5 × 0·8–1·5 mm, equal, not imbricate, lanceolate to narrowly elliptic, acute, margin entire; veins 3–5, unbranched, not prominent; glands absent. *Petals* golden (?) yellow, occasionally veined red outside, 3·5–6 × 1·25–1·75 mm, equalling or slightly shorter than sepals, oblanceolate; apiculus obtuse; glands absent. *Stamens* 12–21, obscurely 5-fascicled, longest 2·5–3·5 mm long, *c.* 0·7 × petals. *Ovary* 1·5–2 × 0·8–1 mm, ovoid to ellipsoid; styles 3, 0·6–1 mm long, 0·3–0·5 × ovary; stigmas narrowly capitate. *Capsule* 4–8 × 2·5–3·5 mm, narrowly conic-ellipsoid, exceeding sepals. *Seeds* 0·5–0·7 (–0·8?) mm long; testa finely linear-scalariform. 2n = 16 (A. & D. Löve, 1982; n = 8: Hoar & Haertl, 1932; D. H. Webb, 1980).

Bogs, marshes, ditches, lake and stream margins, meadow, mixed woods, and other damp habitats; sea level to 1200 m (Montana).

Canada (Vancouver Island to Nova Scotia, to *c.* 55°N in Alberta), U.S.A. (Washington to Maine, south to Colorado, Kansas, and Ohio).

Introduced into France, Germany, and Japan.

CANADA. Alberta: *Edmonton, 22 July–4 August 1893, *White* 1175 (MICH). British Colombia: Sproat Lake, 12 August 1887 (fl), *Macoun* s.n. (BM, UPS); *Harrison Lake, 17 August 1916, *Carter* 247 (GH). Manitoba: *Lake Winnipeg, Muskeg I., 4 August 1884, *Macoun* 349 (GH). New Brunswick: Northumberland Co., Chatham, 5 September 1913 (fr), *Blake* 5606 (K, NY, US); Chamcook Lake, near Saint Stephen, 19 July 1955 (fl), *Scoggan* 12559 (W). Nova Scotia: see Gillett & Robson (1981: map 6). Ontario: Thunder Bay Co., Roundtable Lake Creek at Frog Lake, Hardwick Twp., 27 August 1951 (fr), *Garton* 1672 (BM, W); Hastings Co., near Belleville, 27 July 1861 (fl), *Macoun* s.n. (K); Kencora Distr., Ignace, *c.* 23 km N. at Barrel Lake, 15 July 1961 (fr), *Baldwin* 9466 (H). Prince Edward Island: see Gillett & Robson (1981: map 6). Quebec: Abitibi Co., Taschereau, 25·5 km NE. at L. Berry, 31 August 1952 (fr), *Baldwin* 4329 (GH, K); Charlevoix Co., Saint-Hilarion, 7 August 1967 (fl & fr), *Cayouette & Leduc* 8595 (H); Napierville Co., Napierville, Petit Rivière de Montréal, 21 September 1950 (fr), *Rampond & Kucyniak* 909 (H). Saskatchewan: *Lake Athabaska, *c.* 3 km W. of Ennuyeuse Creek, 25 August 1935, *Raup* 6980 (GH, NY).

U.S.A. *Colorado: Boulder Co., near Boulder, July 1902, *Tweedy* 4977 (NY). Connecticut: *Hartford Co., W. of Avon, on US 44 near junction with Conn. 167, 23 October 1966, *Ahles* 65404 (NCU). Idaho: *Bonner Co., Sandpoint, 30 July 1930, *Christ* 839 (NY). Illinois: McHenry Co., Ringwood, 1860 (fl & fr), *Vasey* s.n. (BM). *Henry Co., *c.* 10·5 km N. of Genseco, 14 August 1947, *Dobbs* 4 (GH). Indiana: Porter Co., Dune Park, 14 September 1907 (fr), *Umbach* 2096 (H); *Steuben Co., S. side of W. half of Crooked Lake, 28 July 1933, *Deam* 54214 (TENN). Iowa: *Black Hawk Co., Waterloo, 21 August 1929, *Burk* 900 (ILL, MO). Kansas: *Harvey Co., 5·6 km N. of Burton, 10 August 1970, *Mcgrath & Weeden* 5796 (NY). Maine: *Cumberland Co., Gray, 17 August 1963, *Seymour* 20827 (MO); Peboscot Co., Oldtown, 14 August 1908 (fl & fr), *Fernald* 238 (NM, GA, GH, K, MICH, MO, NY, TENN, US, W). Massachusetts: Hampshire Co., Hatfield, 12 August 1978 (fl & fr), *Ahles* 86209 (BM). Michigan: Presque Isle Co., Lake Sixteen, 12 August 1937 (fl & fr), *Ehlers* 6243 (GB, MICH). Minnesota: Cook Co., Hwy 61c 1·5 km NE. of Cook Co. line, 11 August 1948 (st), *Ownbey* 984 (H). Montana: Lincoln Co., Noxon, Bull R., 24 km up, 16 September 1927 (fr), *Kirkwood* 2482 (GH, K). Nebraska: *Thomas Co., Thedford, 7 July 1887, *Webber* s.n. (MO). New Hampshire: Cheshire Co., Walpole, River Rd. South at R.R. crossing, 10 August 1972 (fl & fr), *Boufford* 7592 (BM, GA, H, NCU, SMU, TENN). New Jersey: *Warren Co., White Pond, 23 July 1924, *Griscom* 12127 (GH). New York: Putnam Co., L. Mahopac,

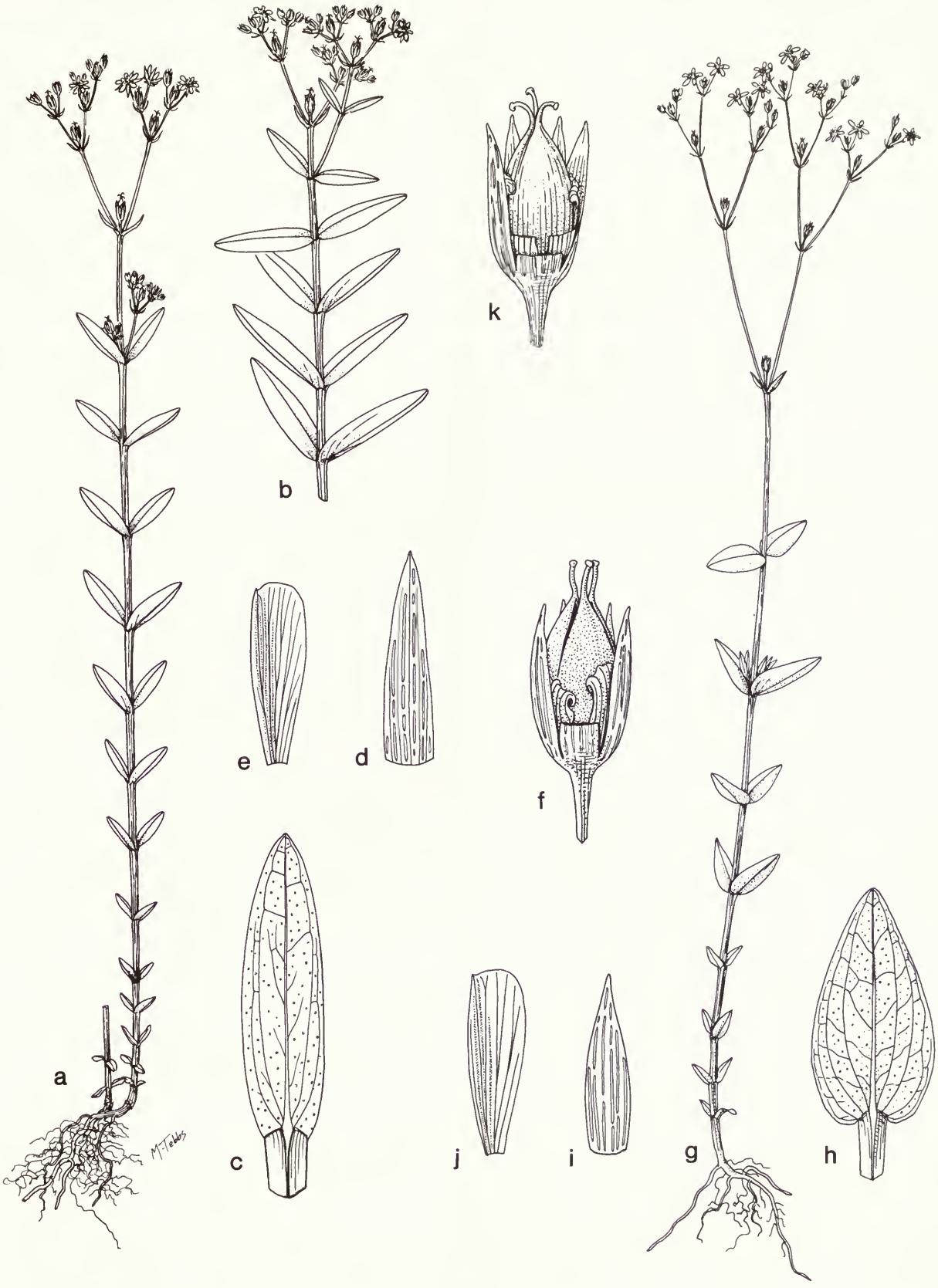


Fig. 20 A. *H. majus*: (a, b) habit; (c) stem with leaf; (d) sepal; (e) petal; (f) capsule with old outer floral parts (partly cut away). B. *H. gymnanthum*: (g) habit; (h) stem with leaf; (i) sepal; (j) petal; (k) capsule with old outer floral parts (partly cut away) (a, b, g, × ½; c, h × 2; d–f, i, j × 6). A(a) *Lunell* s.n.; (b) *Garton* 1672; (c–f) *Ahles* 86209. B. *Hall* 34.

August 1848 (fl & fr), *Carey* s.n. (K); Warren Co., Schroon R., 16 km N. of Warrensburg, 15 August 1940, *House* 27584 (MO). North Dakota: Benson Co., Butte, 10 September 1905 (fr), *Lunnell* s.n. (BM). Ohio: Wood Co., Liberty Twp., 12 August 1937, *Shanks* 938 (NY). Pennsylvania: *Eric Co., Eric, Presque Isle, 28 July 1868, *Porter* s.n. (GH). Rhode Island: *Newport Co., Crescent Beach, Block Island, 20 August 1913, *Fernald & Long* 9909 (GH). South Dakota: Custer Co., Custer, 1650 m, 20 August 1892 (fl), *Rydberg* 572 (K, NY). Vermont: *Windham Co., Jamaica, 1 September 1935, *Moldenke* 8836 (ILL, NY). Washington: King Co., Seattle, July 1891 (fl & fr), *Piper* 1115 (G, H, K, NY). Wisconsin: Brown Co., Green Bay, 11 July 1891 (fr), *Cheney* s.n. (H); Adams Co., Silver Lake, Quincy Twp., 31 August 1958, *Hartley & Thorne* 5870 (Ill, US).

FRANCE (introduced). Haut Saône: La Mer, près de l'Etang d'Arfin, 540 m, 17 August 1958 (fl), *Simon* (K); Faucogney-et-la-Mer, 700–800 m, 29 August 1974 (fl & fr), *Knapp* in Auquier Exsicc. F. 16, 7615 (H).

GERMANY (introduced). Bavaria: Oberpfalz, bei Sperlhammer, 14 September 1959 (fr), *Vollrath* s.n. (BM, K).

JAPAN (introduced). Hokkaido: Hidaka, Mt. Apoi, 13 September 1974 (fl & fr), *Hara, Kurosawa & Tateishi* s.n. (TI).

H. majus is a northern relative of 32. *H. pauciflorum*, differing from the broad-leaved form of that species by the annual habit, thinner leaves, dichasial inflorescence, smaller flowers, and short, broader capsules. In the past it was the western member of a vicariant species pair of which *H. canadense* was the (derivative) eastern member; but the pair subsequently became sympatric in glaciated north-eastern North America and now hybridize freely (see Utech & Iltis (1970), Webb (1980), and below). *H. majus* also hybridizes with 39.c. *H. mutilum* subsp. *boreale*. *H. majus* has been introduced relatively recently into Germany (first noted 1948), France (first noted before 1955), and Japan (first noted 1974). The method of introduction is unknown.

36x. **Hypericum majus × canadense**

Hybrids occur in mixed populations of the parent species. They are shorter than *H. majus* with leaves of intermediate shape, width, and vein number and also have intermediate sepals and capsules (see Utech & Iltis (1970) and Webb (1980) for records).

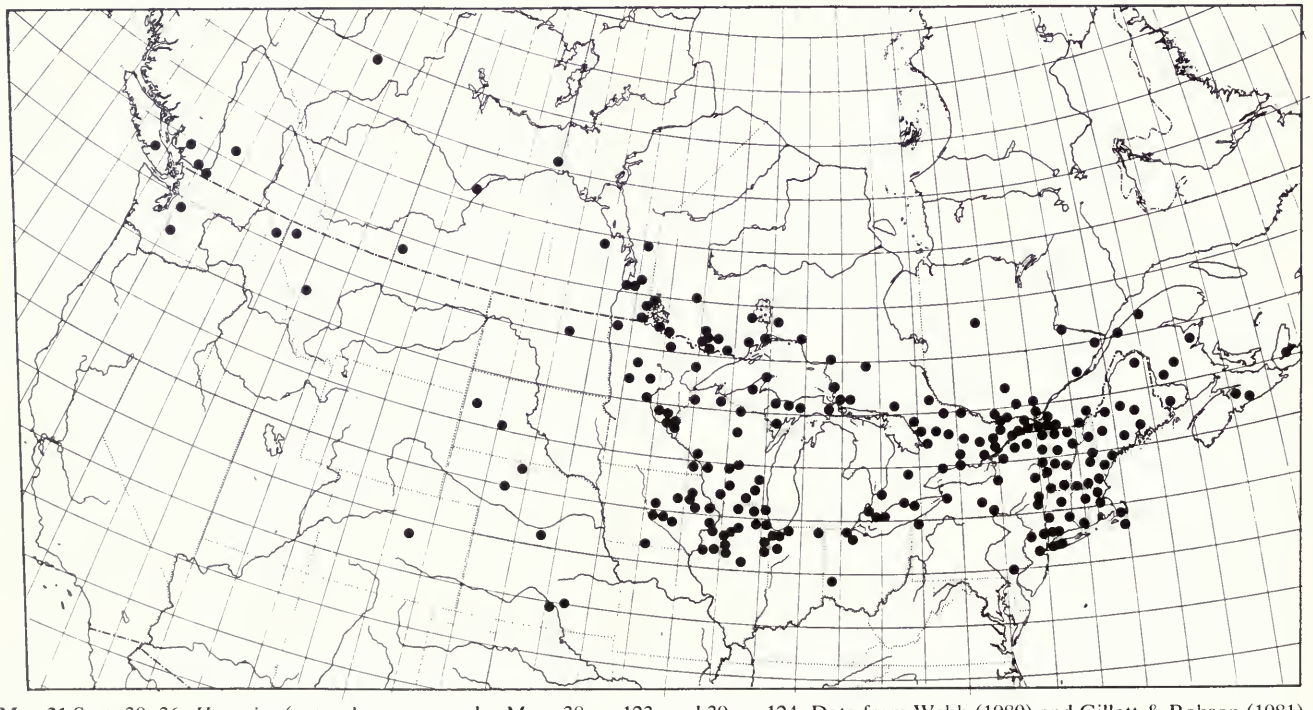
36xx. **Hypericum majus × mutilum**
Hybrids are formed with both subspecies and are intermediate in form between the parents.

36xxa. **Hypericum majus? × mutilum** subsp. **mutilum**
See Webb (1980) for record.

36xxb. **Hypericum majus × mutilum** subsp. **boreale**
Hybrids, which occur in mixed populations of the parents, are shorter than *H. majus* with a diffusely branched inflorescence and shorter elliptic-ovoid capsules like subsp. **boreale** (see Utech & Iltis (1970) and Webb (1980) for records).

Gillett, in Gillett & Robson (1981: 17), suggested from field observations that some confusion between these species arose because small plants of *H. majus* may result from the immediate germination of seed dropped from the large ones. Plants so produced may flower before they attain full development, possibly because of the effect of day-length.

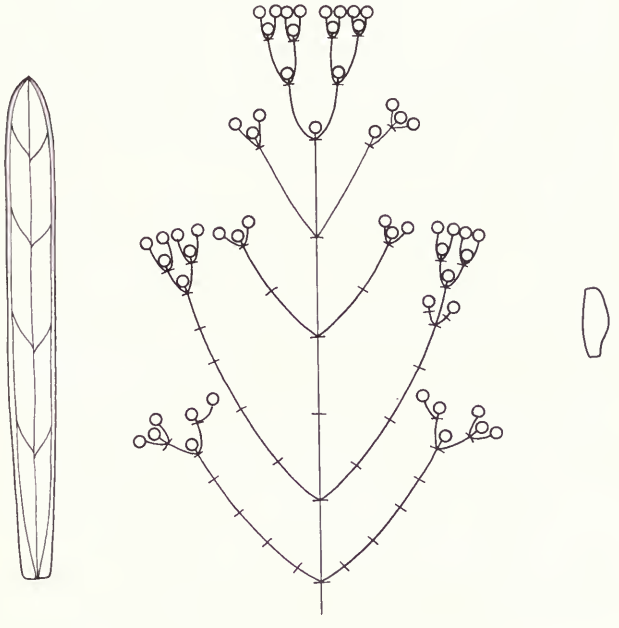
37. **Hypericum canadense** L., *Sp. pl.*: 785 (1753), *Amoen. acad.* **8**: 322 (1776); Lam., *Encycl.* **4**: 162 (1795); Michaux, *Fl. bor.-amer.* **2**: 79 (1803); Choisy, *Prodr. monogr. Hypéric.*: 52 (1821), in DC., *Prodr.* **1**: 550 (1824); Torrey & A. Gray, *Fl. N. Amer.* **1**: 165 (1838); Hook., *Fl. bor.-amer.* **1**: 110 (1840); Walp., *Repert. bot. syst.* **1**: 387 (1842); D. Dietr., *Syn. pl.* **4**: 1235 (1847); Trevir., *Hyper. sp. animadv.*: 10 (1861); Coulter in *Bot. Gaz.* **11**: 110 (1886); Chapman, *Fl. South. U.S.*: 42 (1892); Britton & A., Brown, *Ill. fl. n. U.S.* **2**: 435, f. 2461 (1897); Farw. in *Ann. Rep. Comm. Parks & Boulev. Detroit* **11**: 75 (1900): C. Mohr in *Contr. U.S. natn. Herb.* **6**: 621 (1901); R. Keller in



Map 31 Sect. 30: 36. *H. majus* (natural range, see also Maps 38, p. 123, and 39, p. 124. Data from Webb (1980) and Gillett & Robson (1981).

Bull. Herb. Boissier II, **8**: 180 (1908), in Engl. & Prantl, *Nat. Pflanzenfam.* 2nd ed. **21**: 183 (1925); J. P. Jonker in *Ned. kruidk. Archf.* **45**: 138 (1935); Fern. in *Gray's Man.* 8th ed.: (1950); Bouchard in *Bull. Soc. bot. Fr.* **101**: 351 (1955); D. Webb in *Jr nat. J.* **12**: 113 (1957), in *Watsonia* **4**: 140 cum t. (1958); P. Adams in *Rhodora* **64**: 240 (1962); Heine in *Bauhinia* **2**: 71 (1962); N. Robson in Tutin et al., *Fl. europaea* **2**: 269 (1968); Utech & Iltis in *Trans. Wis. Acad. Sci. Arts Lett.* **58**: 344, f. 5 (1970); Lousley in *Watsonia* **8**: 293 (1971); Westoff in *Gorteria* **5**: 239 (1971); Rodríguez Jiménez in *C. r. Soc. Biogéogr.* **432**: 87, map 1 (1972), in *Mems Soc. Cienc. nat. La Salle* **33**: 71, ff. 1E, 3i, 12D (1973); D. Webb & Halliday in *Watsonia* **9**: 333 (1973); D. H. Webb, *Biosyst. Study Hypericum sect. Spachium in eastern N. Am.*: 242 (1980); J. M. Gillett & N. Robson in *Publs Bot. natn. Mus. nat. Sci. Can.* No. 11: 21, t. 9, map 6 (1981). Type: Canada, *Kalm* in Herb. Linn. 943.26 (LINN!-holotype).

Maps 32, 38.



H. hedyotifolium Poiret, *Encycl.* Suppl. **3**: 700 (1813); Choisy, *Prodr. monogr. Hypéric.*: 461 (1821), in DC., *Prodr.* **1**: 574 (1824); Torrey & A. Gray, *Fl. N. Amer.* **1**: 166 (1838); Fern. & Schubert in *Rhodora* **50**: 208 (1948). Type: Canada?, 'Amer. Septent.', *Hb. Tournefort* 2187 (P!-holotype).

Sarothra canadensis (L.) Raf. in *Am. mon. Mag.*: 267 (1818), *Atl. J.* **1**: 17 (1832) in nota, *Fl. tellur.* **3**: 79 [1836] (1837), comb. invalid. (Art. 33.1)

H. canadense [var.] ß sensu Choisy, *Prodr. monogr. Hypéric.*: 52 (1821).

H. canadense [var.] ß *minimum* Choisy in DC., *Prodr.* **1**: 550 (1824); Coulter in *Bot. Gaz.* **11**: 110 (1886); Britton in *Bull. Torrey bot. Club.* **18**: 365 (1891); R. Keller in *Bull. Herb. Boissier* II, **8**: 188 (1908), pro parte, quoad typum et spec. ex Wisconsin. Type: Canada, 'H. acadiense minimum', *Collector unknown* (G–DC). Britton (1891) and D. H. Webb (1980) both doubted that the type belonged to *H. canadense*, but I can confirm that it does do so.

Brathys canadensis (L.) Spach in *Annls Sci. nat.* (Bot.) II, **5**: 367 (1836).

Hypericum canadense var. *magninsulare* Weath. in *Rhodora* **30**: 188, f. 1 (1928). Type: Canada, New Brunswick, Grand Manan Island, 6 August 1926 (fl & fr), *C. & U. Weatherby* 5545 (GH!-holotype).

H. canadense var. *galiiforme* Fern. in *Rhodora* **49**: 154, t. 1076 (1947). Type: U.S.A., Virginia, Sussex Co., SW. of Wakefield, 11–12 September 1945, *Fernald & Long* 14962 (GH-holotype; GA, MO, NY, PH, P!-photographs).

H. canadense forma *minimum* (Choisy) J. Rouss. in *Contr. Inst. bot. Univ. Montreal* **32**: 34 (1938), in *Nat. Canad.* **65**: 307 (1938).

H. brathydium sensu Rodríguez Jiménez in *Mems Soc. Cienc. nat. La Salle* **33**: 71 (1973), in syn.

Icones: D. Webb in *Watsonia* **4**: 144 (1958); J. M. Gillett & N. Robson in *Publs Bot. natn. Mus. nat. Sci. Can.* No. 11: 22, t. 9 (1981).

Perennial or annual herb, perennating by autumn basal offshoots, 0·03–0·6(0·75) m tall, erect, with stems few or solitary, often with strict or ascending branches from upper nodes, not rooting, with taproot. *Stems* green, 4-angled, scarcely ancipitous above, with lines smooth, internodes 2 mm (lower) to 30 mm (upper) long. *Leaves* sessile to subsessile, erect or ± spreading, not tetrastichous, persistent; lamina (6–)10–40(–55) × 0·5–4(–5·5) mm, linear to oblanceolate-linear (the lower oblanceolate to obovate), plane, not cucullate, midrib prominent proximally, smooth, slightly paler beneath, not glaucous, chartaceous; apex rounded, margin entire, base parallel-sided to attenuate, not sheathing, free; basal or near-basal veins 1–3(–5), without or with 1–4 pairs of ascending midrib branches, tertiary reticulation obscure, dense; laminar glands dense, punctiform, not prominent. *Inflorescence* 1–*c.* 35-flowered, terminal, branching regularly dichasial or monochasial above 2nd or 3rd node, sometimes with ascending pairs of flowering branches from up to 8 nodes below, the whole ± diffusely corymbiform to cylindric; pedicels 1–3 mm long; uppermost leaves and bracts subulate, entire. *Flowers* 5–6 mm in diam., stellate. *Sepals* 2·5–4·5 × 0·8–1 mm, shorter than to exceeding leaves, linear-lanceolate to lanceolate or rarely ovate, acute to acuminate, margin entire; veins 3–5, unbranched, not prominent. *Petals* golden yellow, occasionally veined red outside, 2·5–4 × 1–1·4(–2) mm, equalling or shorter than sepals, elliptic to narrowly obovate; apiculus and glands absent. *Stamens* 12–25, obscurely 3–5-fascicled, longest 2–2·5 mm long, *c.* 0·7 × petals. *Ovary c.* 2 × 1 mm, ovoid-conic; styles 3, 0·5–0·8 mm long, *c.* 0·3 × ovary; stigmas narrowly capitate. *Capsule* 4–6 × (1·5)2–2·5(–3) mm, ± narrowly conic to conic-cylindric, exceeding sepals. *Seeds* 0·5–0·7 mm long; testa finely linear-scalariform. 2n = 16 (Moore, 1973; Kapoor, 1982); n = 8 (Hoar & Haertl, 1932; D. H. Webb, 1980).

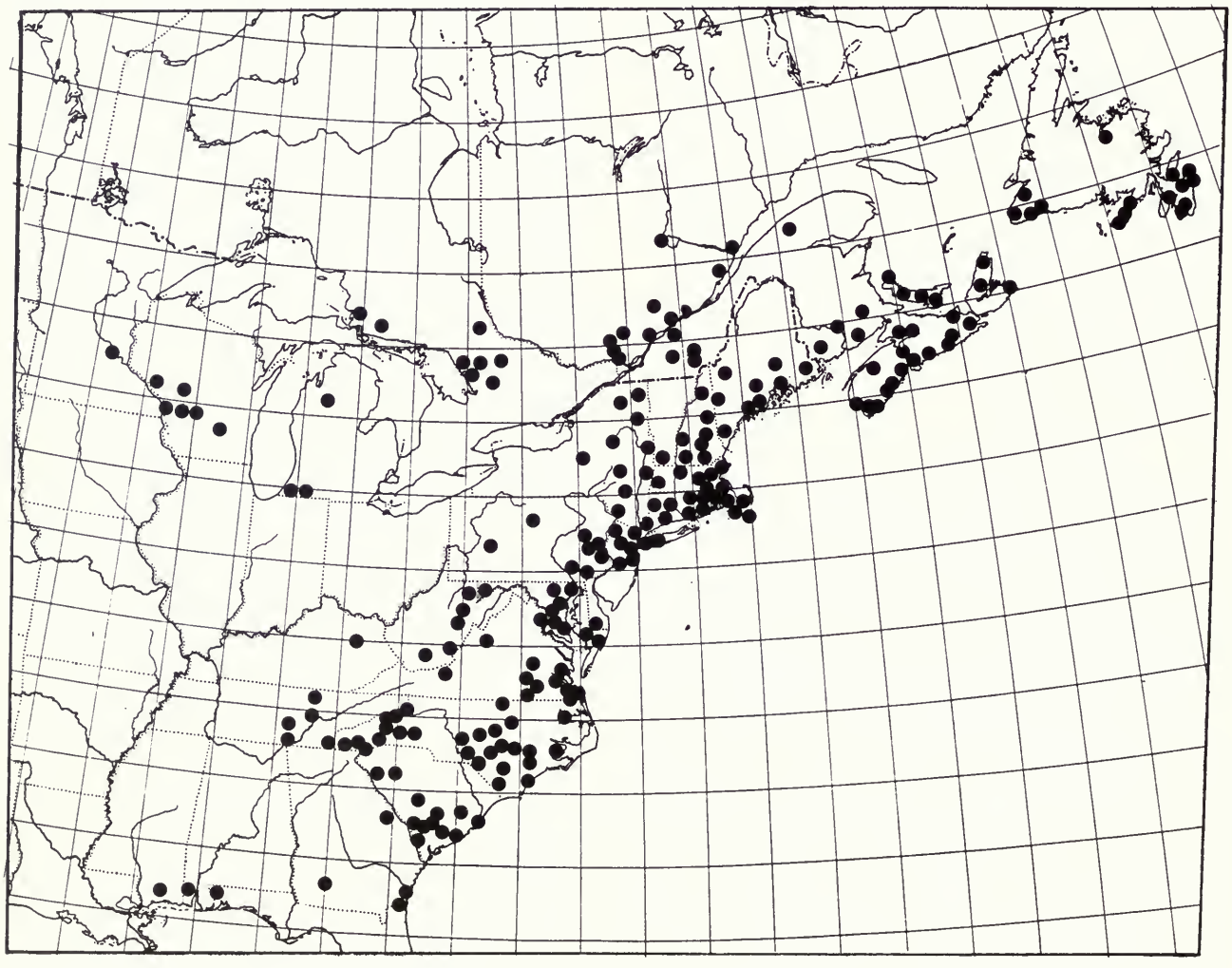
Bogs, marshes, depressions, lakes and pond margins; lowland.

Canada (eastern Ontario to Newfoundland), U.S.A. (Minnesota to Maine, south to Florida and west to Alabama and Mississippi).

CANADA. New Brunswick: ? Co., Newcastle, 24 km W. of city, 10 August 1955 (fl & fr), *Scoggan* 12773 (W); Charlotte Co., Grand Manan, 14 August 1927 (fl & fr), *C. & U. Weatherby* 568 (BM, BR, GA, GH, ILL, K, MICH, MO, NA, NY, P, SMU, TENN, US). Newfoundland: Avalon

Peninsula, Conception Bay, Carbonear, 6 August 1911 (fl), *Fernald & Wiegand* 5850 (BM, GH, MO, P, US, W). Nova Scotia: *Yarmouth Co., Butler's Lake, Gavelton, 4 September 1920, *Fernald* et al. 21866 (GH). Ontario: *Algoma Co., Batchawana bay, 22 July 1935, *Taylor* et al. 1478 (US); *Parry Sound Co., Port Sydney Distr., 9 August 1917, *Tripp* 480 (NY). Prince Edward Island: Queen's Co., Wood Islands, 20 July 1952 (fl), *Erskine* 1315 (BM, NY). Quebec: Abitibi Co., Taschereau, 25 km NE. at Lake Berry, 31 August 1952 (fr), *Baldwin* 4330 (GH, H, K); Argenteuil Co., St.-Adolphe, 29 July 1955 (fl), *Rolland-Germain* 6246 (BM, K, NY, SMU).

U.S.A. Connecticut: Tolland Co., Ellington, 14 August 1873 (fl), *Pease* (BM); *Andover, Hop R., 30 August 1957, *Seymour* 17657 (MO). Delaware: Sussex Co., Silver Lake, Rehoboth Beach, 22 June 1942, *McVaugh* 6506 (NY). Distr. of Colombia: *Holmhead Swamp, 5 August 1877, *Ward* s.n. (US). Florida: *Escambia Co. along Fla. 95, 17·3 km N. of junction with US 29, N. of Pensacola, 3 August 1970, *Godfrey* 69646 (NCU). Georgia: *Glynn Co., along Rt. 17, 19·2 km N. of Satilla R., 25 August 1976, *Webb* et al. 52497 (TENN); Sumter Co., 30 July 1897 (fl), *Harper* s.n. (BM). Illinois: *Kankakee Co., Kankakee, 25 July 1973, *Hill* (?) 261–1873 (ILL). Indiana: Porter Co., Baileytown, Mud (Goose) L., 17 August 1958 (fr), *Bennett* s.n. (W p.p.). Kentucky: *Montgomery Co., 4 km SE. of Jeffersonville, 23 June 1938, *Wharton* 2769 (MICH). Maine: Penobscot Co., Orons, 18 August 1908 (fr), *Fernald* 239 (BM, GH, K, MICH, MO, NY, P. TENN, US, W). Maryland: Prince George Co., Beltsville, 5 September 1950 (fl & fr), *Petrak* 729 (W); Howard Co., Savage Station, 4 September 1905, *House* 1516 (MO, US). Massachusetts: Barnstable Co., Bourne, Deep-Bottom Pond, 21 August 1909 (fr), *Fernald & Long* 18764 (K). Michigan: *Chipewa Co., W. end of Walker Lake, *c.* 3 km SW. of Strongs, 10 August 1954, *Voss* 2449 (MICH, SMU). Minnesota: *Hennepin Co., vicinity of Minneapolis, July 1892, *Aiton* s.n. (TENN). Mississippi: *Stone Co., Mississippi State Forest Lands near office at pond, 23 August 1953, *Diener* 1306 (ILL). New Hampshire: *Belknap Co., 3·2 km N. of Meridith, 15 August 1935, *True* 1026 (US). New Jersey: Ocean Co., 16 km W. of Barneast, 13 September 1932 (fl & fr), *Gleason & Smith* 176 (TAI); *Somerset Co., Watchung, 21 August 1947, *Moldenke* 19132 (NY). New York: Hamilton Co., Raquette Lake, 1·6 km NE. of South Inlet, 27 July 1947 (fl), *Dress* 35 (BM, SMU). North Carolina: Gates Co., 8·5 km W. of Gates, 16 October 1958 (fr), *Ahles* 51610 (BM). Pennsylvania: Lancaster Co., S. of Refton, 23 September 1901 (fr), *Heller* s.n. (MO, P, US). Rhode Island: *Newport Co., back of Crescent Beach, Block I., 20 August 1913, *Fernald & Long* 9913 (GH). South Carolina: Anderson Co., Anderson, 21 July 1921 (fl & fr), *Davis* 2089 (P). Tennessee: *Grundy Co., Beersheba Springs, 13 August



Map 32 Sect. 30: 37. *H. canadense* (natural range, see also Map 38, p. 123). Data from Webb (1980) and Gillett & Robson (1981).

1938, *Svenson* 8917 (MO, TENN). Vermont: Windham Co., Jamaica, 18 July 1937, *H. & M. Moldenke* 9948 (NY). Virginia: Caroline Co., 1–3 km SW. of Rutherglen P.O., 16 September 1943 (fr), *Iltis* 2371 (WIS). West Virginia: *Preston Co., near Amboy, 31 August 1950, *Davis & Davis* 9231 (GA, MO, NCU, NY, TENN, US). Wisconsin: *Jackson Co., Glacial Lake, City Point Twp, 2 September 1958, *Hartley & Thorne* 6025 (ILL, US).

IRELAND (introduced). Co. Mayo: Gortmore, SW. end of Lough Mask, 31 August 1957 (fl & fr), *D. H. Webb* s.n. (BM, K). Co. Cork: Glengariff, near car park of Eccles Hotel, 6 August 1968 (fl), *Mr & Mrs K. L. Butcher* s.n. (K).

HOLLAND (introduced). Overijssel: Harbrinkhoek, August 1937 (fl & fr), *Jonker* s.n. (K).

H. canadense was the (derivative) eastern member of a vicariant species pair, of which *H. majus* was the western member; but the pair became sympatric in glaciated north-eastern North America by the subsequent migration eastward of *H. majus*, and they now hybridize freely (see Utech & Iltis (1970), Webb (1980), and below). *H. canadense* may also have helped this intermixing by migrating westward; according to Utech & Iltis it appears to have spread in Wisconsin since 1930. It differs from *H. majus* by the narrower, linear (not lanceolate) leaves and smaller flowers and fruits.

H. canadense was first collected in Ireland in 1906 (Webb, 1969), but the specimen was not correctly identified until after the second collection, in 1954, from Lough Mask, Co. Galway (Webb, 1957). It is currently known from five distinct localities near Lough Mask in Co. Galway and Co. Mayo, as well as from one locality in the south of Ireland (Co. Cork, Glengarriff). The provision of open habitats by grazing and trampling of wet turf by cattle seems to be an important factor in its distribution in Ireland. It is likewise termed a pioneer by Utech & Iltis (1970).

The first record of *H. canadense* from eastern Holland (Almelo, Prov. Overijsel) was in 1909 (Jonker, 1959; Heine, 1962). It was subsequently refound in 1918 but not recognized until Jonker collected it in the same area (at Harbrinhoek) in 1934 (Jonker, 1935). In Holland it grows in dune slacks.

The status of *H. canadense* in Europe has been much debated, and Webb (1958) and Webb & Halliday (1973) have reviewed the evidence. Its occupation of natural habitats remote from habitation and human activity, and the absence of a noticeable increase in area since its discovery, suggest that it is an established member of the Irish and Dutch floras, possibly a periglacial survivor. On the other hand, its relatively recent discovery in areas that were well-known to some earlier botanists, as well as the discovery in scattered European localities, at various dates since 1834, of four other closely related North American species (Heine, 1962; Robson, 1968), tends to indicate a more recent arrival. Introduction by human agency seems unlikely (except perhaps to Glengarriff (Lousley, 1971)), but long-distance transport (ancient or recent) by waterfowl remains a distinct possibility. Bouchard (1954), however, thought that the French population (Haute-Saône) could have been introduced with fodder for American horses during the 1914–1918 war.

As well as crossing with *H. majus, H. canadense* hybridizes with *H. mutilum* (both subspecies) and possibly *H. gymnanthum*.

37x. **Hypericum × dissimulatum** E. Bickn. (*H. canadense* × *mutilum*) in *Bull. Torrey bot. Club.* **40**: 610 (1913), pro spec.; Fern. in *Rhodora* **49**: 87 (1947), *Gray's Man. Bot.* 8th ed.: 1014 (1950); Utech & Iltis in *Trans. Wis. Acad. Sci. Arts Lett.* **58**: 345 (1970); D. H. Webb, *Biosyst. Study Hypericum sect. Spachium in eastern N. Am.*: 96, 313 (1980); J. M. Gillett & N. Robson in *Publs Bot. natn. Mus. nat. Sci. Can.* No. 11: 23 (1981). Type: U.S.A., Massachusetts, Nantucket, W. of town, 20 September 1899, *Bicknell* s.n. (NY-lectotype, chosen by Rodríguez Jiménez (1973: 75); P!-photograph).

H. canadense var. *parvicarpum* E. Bickn. in *Bull. Torrey bot. Club* **22**: 215 (1895). Type: U.S.A. Maine, York Harbour, *Bicknell* s.n. (NY?-holotype).

Icon: M. Brown & R. G. Brown, *Herb. pls Maryland*: 647 (1984).

Similar to *H. canadense* but usually laxer and more branched, with smaller (8–13 × 1–3 mm) elliptic leaves and shorter capsules (3–4 mm long). Bicknell (1913), however, found plants morphologically nearer to each presumed parent.

In similar habitats to those of the parents and usually growing with them. According to Fernand (Pl. Exsicc. Gray. 377), the hybrids developed later than the parents and (in that population) showed no intergrading.

Eastern Canada and eastern U.S.A. from Wisconsin to Newfoundland and south to Virginia and Tennessee, where the distributions of the parents overlap. The more northern hybrids are more often *H. canadense* × *mutilum* subsp. *boreale* and the more southern *H. canadense* × *mutilum* subsp. *mutilum*. The following records are merely examples and do not cover the whole area of the hybrids.

CANADA. Newfoundland: *Digby Co., near Cedar Lake, New Tusket, 4 September 1921, *Fernald & Long* 24154 (GH, NY). Quebec: East Abitibi Co., Amos 28·8 km SE. at L. Roy, 14 July 1953 (fl), *Baldwin* 5476 (GH, K).

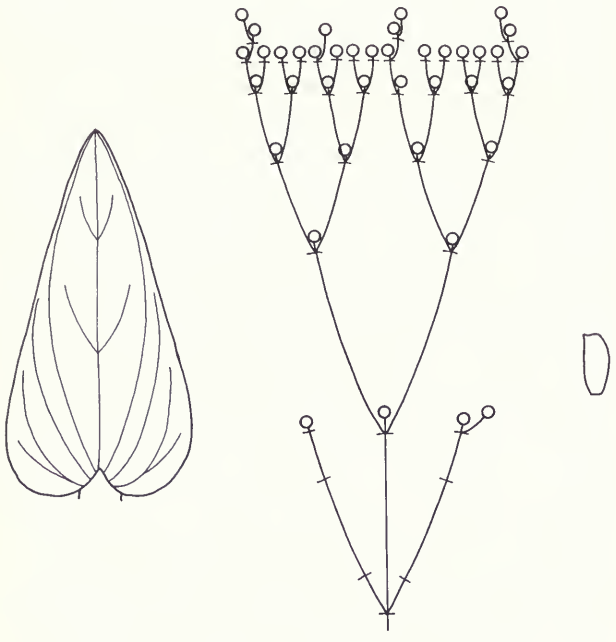
U.S.A. Maine: *York Co., 20 August 1896, *Bicknell* s.n. (NY). Massachusetts: Barnstable Co., Brewster Griffith's Pond, 12 September 1918 (fl & fr), *Fernald* Pl. Exsicc. Gray. 377 (BM, GA, GH, K, MICH, MO, NY, P, US, W). Virginia; *Sussex Co., N. of Littleton, 22 July 1936, *Fernald & Long* 6281 (GH).

Bicknell (1913), although aware of its probable hybrid origin, thought *H.* × *dissimulatum* was a 'good species', a view that was accepted by Fernald (1950). Even Bicknell's evidence, however, seems to indicate that it is a hybrid, and most authors accept it as such. Webb (1980: 97), on the basis of studies of pollen viability as well as morphology, concluded 'that the name *H. dissimulatum* has been applied to recurrent hybrids in both *H. canadense* × *mutilum* and *H. canadense* × *boreale*'. It is not always possible to differentiate between the above two forms of hybrid; but if, as here, *mutilum* and *boreale* are treated as subspecies, then the name *H.* × *dissimulatum* can be applied to both. Indeed, Bicknell's original description indicated that some plants were nearer *H. mutilum* and others nearer *H. boreale*. Because the hybrids form a continuous series, I have not described or proposed epithets for the respective hybrids.

38. **Hypericum gymnanthum** Engelm. & Gray in *Boston J. nat. Hist.* **5**: 212 (1847); Coulter in *Bot. Gaz.* **11**: 109 (1886); Chapman, *Fl. South. U.S.* 3rd ed.: 60 (1897); Small, *Fl. s.-e. U.S.* 2nd ed.: 787 (1913); Standley & Williams in *Fieldiana Bot.* **24**(7): 50 (1961); Heine in *Bauhinia* **2**: 75 (1962); N. Robson in Tutin et al., *Fl. europaea* **2**: 269 (1968); Correll & M. Johnston, *Man. vasc.*

pl. Texas: 1065 (1970); Rodríguez Jiménez in *C. r. Soc. Biogéogr.* **432**: 89, map 1 (1972), in *Mems Soc. Cienc. nat. La Salle* **33**: 77, ff. 1b, 12c (1973), pro parte, excl. syn. *H. mutilum* var. *latisepalum*; D. H. Webb, *Biosyst. Study. Hypericum sect. Spachium in eastern N. Am.*: 234 (1980). Type: U.S.A., Texas, near Houston, 1843 (fr), *Lindheimer* 17 (GH-holotype; BM!, F!, K!, MO-isotypes).

Fig. 20B, Maps 33, 35, 38.



H. mutilum var. *gymnanthum* (Engelm. & Gray) A. Gray, *Manual* 5th ed.: 86 (1867); R. Keller in *Bull. Herb. Boissier* II, **8**: 184 (1908).

H. japonicum sensu R. Uechtr. & Asch. in *Ber. dt. bot. Ges.* **3**: 63 (1885).

H. canadense var. *cardiophyllum R. Keller in Bull. Herb. Boissier* II, **8**: 189 (1908). Type: U.S.A., Illinois, Menard Co., Athens, 1861 (fr), *Hall* s.n. (G!-holotype; GH!, P!-isotypes).

Sarothra gymnantha (Engelm. & Gray) Y. Kimura in Nakai & Honda, *Nova fl. jap.* **10**: 232 (1951).

Icon: M. Brown & R. G. Brown, *Herb. pls Maryland*: 647 (1984).

Annual herb (0·06–)0·15–0·7 m tall, erect or sometimes with base shortly decumbent and rooting, with stems solitary, without or rarely with 1–3(–6) pairs of suberect branches above, with lines smooth; internodes 4–70 mm, long, all or upper exceeding leaves. *Leaves* sessile, spreading, not tetrastichous, persistent; lamina (5–)10–25 × 3–12 mm, ovate-deltoid or broadly ovate to rarely oblong, plane, not cucullate, midrib prominent beneath, smooth, paler beneath, chartaceous; apex subacute to rounded, margin plane, base cordate-amplexicaul to rounded, not sheathing, free; basal veins (3–)5, often with less prominent ascending midrib branches, tertiary reticulation rather lax, obscure; laminar glands dense, punctiform, not prominent. *Inflorescence* (1–)5–35(–*c.* 65)-flowered, terminal, branching regularly dichasial, occasionally with flowering branches from up to 6 nodes below, the whole laxly corymbiform to cylindric; pedicels 1–4(–12) mm long; uppermost leaves and bracts subulate, entire. *Flowers* 4·5–7 mm in diam., stellate. *Sepals* (3–)3·5–5 × 0·8–1·2 mm, equal, proximally imbricate, lanceolate to narrowly ovate, acute to acuminate, margin entire; veins 3–5, unbranched, not prominent. *Petals* golden (?) yellow, not veined red outside, (2–)3–3·5(–4) × 0·9–1·2 mm, shorter than sepals, oblanceolate; apiculus and glands absent. *Stamens* 10–14, scarcely grouped, longest 1·5–2·5 mm long, *c.* 0·7 × petals. *Ovary c.* 1 × 0·5 mm, narrowly ovoid; styles 3, 0·5–0·7 mm long, *c.* 0·5 (?) × ovary; stigmas narrowly capitate. *Capsule* (3–)3·5–5 × 1·5–2 mm, narrowly conic-ellipsoid, slightly shorter than to slightly exceeding sepals. *Seeds* 0·5–0·6 mm long: testa finely linear-scalariform. 2n = 16 (n = 8: D. H. Webb, 1980).

Bogs, ditches, open and cleared woods, in damp habitats; lowland (U.S.A.), 1300–1400 m (Guatemala).

U.S.A. (eastern Texas to Florida and north to Illinois and Pennsylvania), Guatemala (Alta Verapaz). Introduced into Poland.

U.S.A. Alabama: *Mobile Co., Mobile, August 1890, *Mohr* s.n. (US). Arkansas: no precise locality, no date (fl & fr), *Nuttall* s.n. (BM, K); *Jefferson Co., N. of Pine Bluff, 8 June 1898, *Eggert* s.n. (MO, NY). Delaware: *New Castle Co., Townsend, July 1863, *Candy* s.n. (MO, NY). Florida: no precise locality, no date (fr), *Teinturier* s.n. (K). Georgia: Sumter Co., Leslie, 17 August 1900 (fr), *Harper* 402 (BM, K, NY, US, W). Illinois: *Kankakee Co., near St Anne, 14 August 1943, *Jones* 16029 (MO). Indiana: *Jasper Co., Gifford Marsh region, Walker Twp., 17 August 1924, *Welch* 436 (ILL). Louisiana: Orleans Par., New Orleans, 1832 (fr), *Drummond* 49 (GH, K, W); *Rapides Par., Alexandria, Camp Beauregard, 30 June 1918, *Leonard* 1549 (US). Maryland: *Calvert Co., Broome I., District No. 1, 25 July 1956, *Seymour* 16736 (MO, SMU); Dorchester Co., Cambridge, 16 August 1904 (fr), *House* 231a (K). Mississippi: Jackson Co., Biloxi, 21 June 1898 (fr), *Tracy* 4492 (BM, GH, MICH, MO, NY, US, W). Missouri: Shannon Co., Montier, 30 June 1894 (fl), *Bush* 62 (K); *Newton Co., Burkhart Prairie, 4 km N. of Racine, 27 July 1956, *Palmer* 63339 (SMU). North Carolina: *Hertford Co., E. of Como, entrance to Camp P–D, Camo Co., Forest, 23 July 1949, *Fox & Godfrey* 2798 (GH, NY). Ohio: *Erie Co., Perkins, 8 September 1895, *Moseley* s.n. (GH?, MO). Pennsylvania: *Centre Co., 3–2 km NW. of State College, 17 August 1938, *Wahl* 113 (GH). South Carolina: *Hampton Co., 2·7 km SE. of Early Branch along S.C. 28, 29 June 1956, *Ahles & Bell* 15718 (NCU, NY). Tennessee: *Coffee Co., *c.* 4·8 km SSE. of Manchester by I-24, 14 August 1968, *Kral* 32234 (SMU). Texas: Waller Co., Hempstead, 12 June 1972 (fr), *Hall* 34 (BM, K); *Orange Co., *c.* 2·5 km E. of Vidor, June 1967, *Correll* 34244 (GH). Virginia: Southampton Co., Franklin, 22–29 July 1893 (fr), *Heller* s.n. (P); *Nansemond Co., Great Dismal Swamp, SE. of Whitemarsh School, 19 July 1939, *Fernald & Long* 10731 (GH, MO, NY, US).

GUATEMALA. Alta Verapaz: Cobán, 1330 m, July 1885 (fr), *von Turkheim* 570 (GH, K, P, US, W); SE. of Cobán, 24 May 1971 (fl & fr), *Wilbur* 14807 (DUKE).

POLAND. Poznan: Posen, bei Theerkeute, September 1885 (fr), *Strahler* s.n. (FR).

H. gymnanthum and *H. mutilum* together represent a north-eastern disjunct development from 32. *H. pauciflorum*. *H. gymnanthum* differs from the Mexico form of that species in its broader, usually ovate-deltoid leaves, the more diffuse inflorescence, and the smaller flowers and fruits. See under

39. *H. mutilum* for the differences from that species.

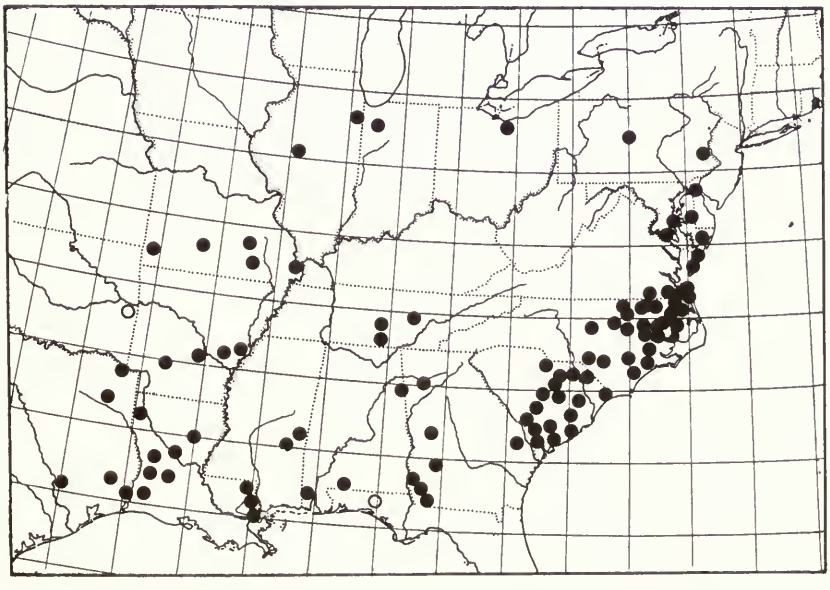
Both the disjunct areas of *H. gymnanthum* are likely to have been achieved by long-distance dispersal (as, no doubt, was the original dispersal of 42. *H. japonicum* to Asia). The Guatemalan population appears to have been first recorded in 1885 and still exists. The Polish population, which was discovered in the same year, was probably introduced with *Trifolium* seed (Heine, 1962), but apparently did not persist.

38x. **Hypericum gymnanthum × mutilum**
Hybrid intermediates between these species have been recorded from various parts of their largely co-incident ranges.

38xx. **Hypericum gymnanthum × canadense**
Doubtfully recorded by Webb (1980) from Virginia: Sussex Co., SW. of Wakefield, shore of Airfield Millpond, 11 & 12 September 1945, *Fernald & Long* 14955 (GH).

39. **Hypericum mutilum** L., *Sp. pl.*: 787 (1753); Barton, *Fl. philadelph. prodr.*: 74 (1815); Torrey & Gray, *Fl. N. Amer.* **1**: 164 (1838); Walp., *Repert. bot. syst.*: 387 (1842); A. Gray, *Manual* 5th ed.: 85 (1856); Triana & Planchon in *Anns Sci. nat.* (Bot.) IV, **18**: 291 (1862); Chapman, *Fl. South. U.S.*: 41 (1872); Reichardt in Martius, *Fl. bras.* **12**: 186 (1878); S. Watson in *Proc. Am. acad. Arts Sci.* **17**: 329 (1882); R. Uechtr. & Asch. in *Ber. dt. bot. Ges.* **3**: XLI–XLII (1885); Coulter in *Bot. Gaz.* **11**: 109 (1886); Britton & A. Brown, *Ill. Fl. n. U.S.* **2**: 434, f. 2458 (1897); R. Keller in *Bull. Herb. Boissier* **6**: 261 (1898), in op. cit. II, **8**: 184 (1908), in Engl. & Prantl, *Nat. Pflanzenfam.* 2nd ed. **21**: 181 (1925); Farw. in *Ann. Rep. Comm. Parks & Boulev. Detroit* **11**: 75 (1900); C. Mohr in *Contr. U.S. natn. Herb.* **6**: 622 (1901); Gorshk. in *Fl. U.R.S.S.* **15**: 257 (1949); Fern., *Gray's Man. Bot.* 8th ed.: 1013 (1950); Lyman B. Smith in *J. Wash. Acad. Sci.* **48**: 313 (1958); Heine in *Bauhinia* **2**: 75 (1962); Cabrera, *Fl. prov. Buenos Aires*: 227 (1965); Angely, *Fl. Anal. Paraná*: 451 (1965); N. Robson in Tutin et al., *Fl. europaea* **2**: 269 (1968); Fosb. in *Occ. Pap. Bernice P. Bishop Mus.* **24**: 23 (1969); Utech & Iltis in *Trans. Wis. Acad. Sci. Arts Lett.* **58**: 339, map 6, f. 5 (1970); Rodríguez Jiménez in *C. r. Soc. Biogéogr.* **432**: 89, map 3 (1972), in *Mems Soc. Cienc. nat. La Salle* **33**: 79, ff. 3e, 12E, tt. 2N, 3B (1973), pro parte, excl. syn. *H. arenarioides*; D. H. Webb, *Biosyst. Study Hypericum sect. Spachium in eastern N. Am.*: 189 (1980); Rodríguez Jiménez in Reitz, *Fl. Ill. Catar., Hypericác.*: 9, f. 2 (1980); N. Robson in *Taxon* **29**: 273 (1980); J. M. Gillett & N. Robson in *Publs Bot. natn. Mus. nat. Sci. Can.* No. 11: 16 (1981). Type: U.S.A. Virginia, *Clayton* 232 (BM!-lectotype – Robson, 1980).

Perennial or annual herb, (0·05)0·15–0·6(–0·8) m tall, erect or sometimes decumbent, with stamens solitary or branched from the base, with or rarely without up to 10 pairs of spreading branches usually from above middle. *Stems* green, 4-angled, sometimes ± ancipitous above, with lines smooth; internodes 10–40 mm long, exceeding leaves except uppermost (often shorter or absent). *Leaves* sessile, spreading, not tetrastichous, persistent (sometimes except lowermost); lamina (3–)5–27(–40) × 1–15 mm, lower ovate or elliptic or elliptic-oblong to obovate or spathulate (deciduous), upper ovate or suborbicular or ovate-deltoid to elliptic or lanceolate-deltoid, plane, not cucullate, midrib slightly prominent beneath, smooth, paler beneath or not, membranous; apex obtuse to rounded, margin plane, base rounded or rarely broadly cuneate to cordate-amplexicaul, not sheathing, free; basal veins 3–5, with less prominent ascending branches, tertiary reticulation rather lax, obscure; laminar glands dense, punctiform, not prominent. inflorescence 5–*c.* 60-flowered, terminal, branching regularly dichasial/monochasial, usually with flowering branches from up to 10 nodes below, the whole cylindric; pedicels (0·5–)1–3(–7) mm long; uppermost leaves foliar, bracts subulate to foliar. *Flowers* 3–5 mm in diam., stellate. *Sepals* 2–4(–4·5) × (0·6–)1–1·5 mm (enlarging in fruit), equal or unequal, rarely imbricate, lanceolate to linear-lanceolate or narrowly oblong or more rarely elliptic-oblong to oblanceolate, acute to apiculate or more rarely obtuse to rounded, margin entire; veins (3–)5, unbranched, not or scarcely prominent; glands linear, distally punctiform. *Petals* golden (?) yellow, not veined red outside, 1·75–2·5(–3·5) × 0·8–1·5 mm, shorter than sepals, oblong (slightly asymmetric); apiculus and glands absent. *Stamens* 5–16, scarcely grouped, longest *c.* 1·8–3 mm long, *c.* 0·8 × petals. *Ovary c.* 1 × 0·6 mm, narrowly ovoid to ellipsoid; styles 3, 0·5 mm long, *c.* 0·5(?–1) × ovary; stigmas rather broadly capitate. *Capsule* 2–4(–5) × 1·6–2·4 mm, narrowly ovoid to cylindric-ellipsoid, exceeding



Map 33 Sect. 30: 38. *H. gymnanthum* (natural range, see also Maps 35, p. 119, and 38, p. 123) ● (confirmed records), ○ (incompletely localized).

sepals. *Seeds* 0·4–0·7 mm long; testa finely linear-scalariform. 2n = 16 (subspp. *mutilum, boreale*) (Hoar & Haertl, 1932; D. H. Webb, 1980), 18 (subsp. *boreale*) (Kapoor, 1972).

Ditches, marshes, lake margins, desiccated temporary pools, and more rarely moist woods and abandoned fields; lowland (U.S.A.) to 1400 m in Mexico, 2300 m in Ecuador.

Eastern Canada and U.S.A. (south-eastern Manitoba and southern Ontario to Newfoundland, south to Florida, west to Texas); introduced into France (Landes), Italy (Tuscany), Poland (Silesia), U.S.S.R. (Georgia), the Azores, Mexico (partly native?), Honduras, Dominican Republic, Colombia, Ecuador, Peru, Brazil, Uruguay, Paraguay, Argentina, New Zealand, and Hawaii.

Hypericum mutilum is related to *H. gymnanthum*, differing from it in the leaf shape and apex, in the amount and angle of branching, usually in having a condensed apical stem node, in its smaller flowers, and in sepal shape.

In its native area, *H. mutilum* is variable in the size and shape of leaves and flowers but is usually easily identified. In Canada, however, Gillett (1979) and Gillett & Robson (1981) have shown that the characters that usually separate *H. mutilum* sensu stricto from *H. boreale* break down, so that it is prudent to treat these taxa as subspecies. In the south, populations along the coastal plain from South Carolina to Florida and west to Texas tend to have dilated (oblanceolate) sepals and were named var. *latisepalum* by Fernald (1936). Although these plants usually also have small broadly ovate to suborbicular leaves and a diffusely branched terminal inflorescence without lateral branching, Webb (1980) refused to recognize them as distinct because dilated sepals were occasionally found elsewhere (e.g. Illinois) in plants with elliptic-oblong leaves. In these coastal populations, however, the terminal stem node is not short or absent, as it is in the rest of the species; and so I have treated them as a distinct subspecies.

39a. **H. mutilum** subsp. **mutilum**

Maps 27B, 34–37, 44.

Ascyrum crux-andreae L., *Sp. pl.*: 788 (1753), pro parte, quoad syn. Plukenet (see Robson, 1980).

Hypericum quinquenervium Walter, *Fl. carol.*: 190 (1788) ['*quinquenervia*']; Gmelin, *Syst. nat.* **2**: 1159 (1791); Michaux, *Fl. bor.-amer.* **2**: 79 (1803); Poiret in Lam., *Encycl.*, Suppl. **3**: 697 (1813); Barton, *Fl. philadelph. prodr.*: 74 (1815); Choisy, *Prodr. monogr. Hypéric.*: 51 (1821), in DC., *Prodr.* **1**: 550 (1824); Sprengel, *Syst. veg.* **3**: 346 (1826); Cham. & Schlechtendal in *Linnaea* **5**: 218 (1830); Hook., *Fl. bor.-amer.* **1**: 110 (1840); Trevir., *Hyper. sp. animadv.*: 10 (1861). Type: U.S.A., Carolina, *Walter* f. 60 No. 692 (BM!-lectotype, Webb, 1980).

H. parviflorum Willd., *Sp. pl.* **3**: 1456 (1802); Pursh, *Fl. Am. sept.* **2**: 377 (1814); Barton, *Fl. philadelph. prodr.*: 74 (1815); Elliott, *Sketch bot. S. Carolina* **2**: 24 (1821), non Salisb. (1796) nec. A. St. Hil. (1828). Type: U.S.A., Pennsylvania, *Mühlenberg* 1 (B-WILLD-holotype, microfiche!).

Sarothra quinquenervia (Walter) Raf., *Am. mon. Mag.* **3**: 267 (1818), comb. invalid. (Art. 33).

S. parviflora (Willd.) Raf., *Am. mon. Mag.* **4**: 192 (1819), comb. invalid. (Art. 33).

Hypericum stellarioides Kunth in Humb., Bonpl. & Kunth, *Nov. gen. sp.* **5**: 196 (1822). Type: Colombia, Caldas, 'crescit in monte Quindui Novo-Granatensium', July 1801, *Humboldt & Bonpland* s.n. (P-HUM!-holotype).

H. euphorbioides A. St. Hil., *Fl. Bras. merid.* **1**: 332, t. 69 (1828); Walp., *Repert. bot. syst.* **1**: 389 (1842); D. Dietr., *Syn. pl.* **4**: 1236 (1847). Type: Brazil, São Paulo, ripas fluminis Parahyba, prope Sebastianopolim et ad rivulos prope Jondiahi, November 1822 (fl & fr), *St.-Hilaire* 1076 (P!-holotype).

H. euphorbioides var. *minus* A. St. Hil., *Fl. Bras.merid.* **1**: 332 (1828). Type: Brazil, Rio de Janeiro, Fazenda da Barra Seca, 1818 (fl & fr), *St.-Hilaire* 231 (P!-holotype).

H. euphorbioides var. *floribundum* A. St. Hil., *Fl. Bras. merid.* **1**: 332 (1828). Type: Brazil, Minas Geraes, ad ripis fluminis Paranahiba, September 1819 (fr), *St.-Hilaire* 921 (P!-holotype).

Brathys quinquenervia (Walter) Spach in *Annls Sci. nat.* (Bot.) II, **5**: 367 (1836).

Brathys euphorbioides (A. St. Hil.) Spach in *Annls Sci. nat.* (Bot.) II, **5**: 367 (1836).

? *Knifa brevistylis* Raf., *Fl. tellur.* **3**: 80 (1837). Type: U.S.A., ? *Rafinesque* (not seen).

Sarothra blentinensis P. Savi in *Nuovo G. Lett. Sci.* **34**: 225 (1839), in Corinaldi, *Mem. Valdarm.*: 54 (1839), in *Annls Sci. nat.* (Bot.) II, **13**: 414 (1840). Type: Italy, Toscano, Bientina, 1836, *Savi* (P-lectotype, Webb, 1980; F!, UPS-isotypes).

Hypericum impunctatum Hochst. ex Steudel, *Nomencl. bot.* 2nd ed. **1**: 788 (1840), nom. illegit. superfl. Type as for *H. quinquenervium* Walter.

H. blentinense (P. Savi) Walp., *Repert. bot. syst.* **1**: 384 (1842) ['*blontinense*']; Bertol., *Fl. ital.* **8**: 340 (1853).

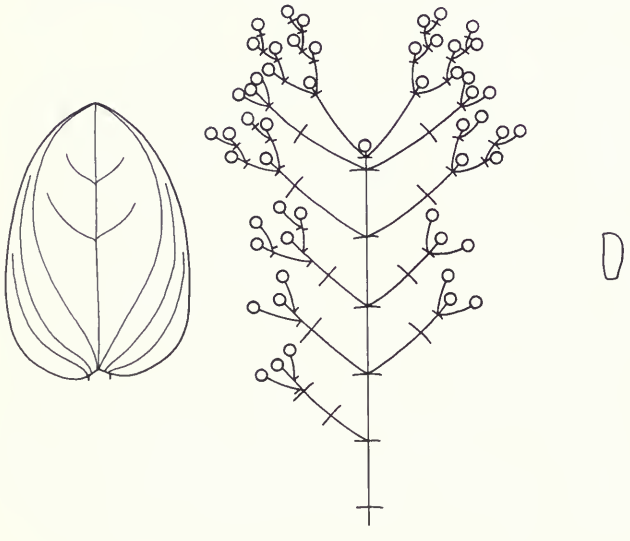
H. rutilum D. Dietr., *Syn. pl.* **4**: 1235 (1847), sphalm.

H. mutilum var. *minimum* Coleman in *Kent Sci. Inst. Misc. Publs* **2**: 9 (1874). Type: U.S.A. (not located).

H. mutilum var. *minus* (A. St. Hil.) Reichardt in Martius, *Fl. bras.* **12**(1): 186 (1878); R. Keller in *Bull. Herb. Boissier* II, **8**: 184 (1908) (comb. independently made).

H. mutilum var. *floribundum* (A. St. Hil.) Reichardt in Martius, *Fl. bras.* **12**(1): 186 (1878); R. Keller in *Bull. Herb. Boissier* II, **8**: 184 (1908) (comb. independently made).

H. mutilum var. *densiflorum* Kuntze, *Revis. gen. pl.* **1**: 60 (1891). Type: U.S.A., Mississippi, Cairo, *Kuntze* 2853 (NY*-holotype).



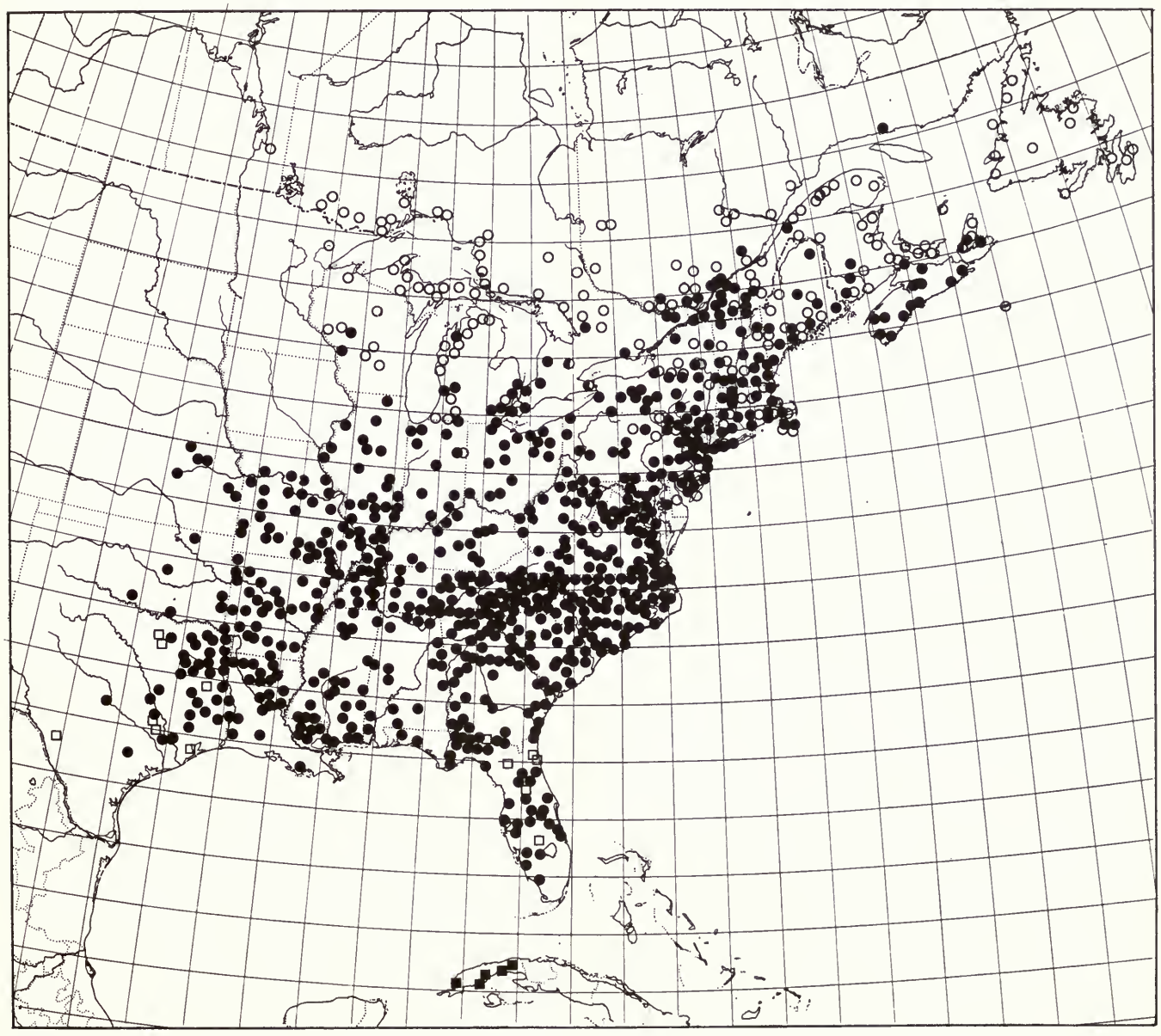
H. H. mutilum var. *foliosissimum* Kuntze, *Revis. gen. pl.* **1**: 60 (1891). Type: U.S.A. ? (not located).
H. mutilum forma *minus* (A. St. Hil.) R. Keller in *Bull. Herb. Boissier* **6**: 261 (1898).
H. collinum var. *liebmannii* R. Keller in *Bull. Herb. Boissier* **6**: 260 (1898). Type: Mexico, Oaxaca, Mirador, February 1842 (fl & fr), *Liebmann* 49 (C!-holotype).
H. liebmannii (R. Keller) R. Keller in Engl. & Prantl, *Nat. Pflanzenfam.* 2nd ed. **21**: 181 (1925).
H. mutilum var. *parviflorum* (Willd.) Fern. in *Rhodora* **41**: 549 (1939).
Sarothra mutila (L.) Y. Kimura in Nakai & Honda, *Nova fl. jap.* **10**: 232, 233 (1951).

Icones: A. St. Hil., *Fl. Bras. merid.* **1**: t. 69 (1828); Correll & H. Correll, *Aquat. wland pls S. westn. U.S.* **2**: 1132, f. 526 (1975); J. M. Gillett & N. Robson in *Publs Bot. natn. Mus. nat. Sci. Can.* No. 11: 18, t. 6 (1981).

Stem with apical internode shorter than those below or almost absent. *Leaves* variable in shape, but rarely broadly ovate or suborbicular, paler beneath. *Sepals* not imbricate or broader above middle or, if so, then leaves not broadly ovate to suborbicular. inflorescence branches from 2–10 nodes, with branching mostly dichasial; bracts subulate.

Distribution almost that of the species but absent from the extreme north and part of the Gulf of Mexico coast. All adventive records apply to this subspecies.

CANADA. New Brunswick: *c. 13 km NW. of St. Andrews, bogs Gibson, Snowshoe, and Welsh Lake vicinity, 24 July 1929, *Malte* 552/29 (GH). Nova Scotia: Shelburne Co., Clyde R., 22 February 1928 (fl & fr), *Prince & Attwood* 1347 (MICH). Ontario: *Essex Co., Tilbury Township, 0·8 km S. of Thames R. Lighthouse, 26 July 1948, *Soper & Dale* 4076 (GH, US). Quebec: Terrebonne Cte, Mont-Tremblant, 8 August 1961 (fl), *St-Pierre* s.n. (G); Lévis Cte, Saint-Louis-



Map 34 Sect. 30: 39a. *H. mutilum* subsp. *mutilum* (part, see also Maps 27, p. 94, 35, p. 119, 36, p. 121, 37, p. 122 and 44 p. 138) ●; 39b. *H. mutilum* subsp. *latisepalum* (confirmed localities only) □; 39c. *H. mutilum* subsp. *boreale* ○; intermediate between 39a and 39c ◐; 40. *H. arenarioides* ■. Data for 39a and 39c from Webb (1980) and Gillett & Robson (1981).

de-Pintendre, 7 September 1963 (fr), *Cayonette* 6921 (H). Saskatchewan (introd.?): *Duval Co., 5 May 1902, *Fredholm* 5166 (SI).

U.S.A. Alabama: *Calhoun Co., margin of Boozer Lake, *c.* 10 km N. of Jacksonville, 14 August 1966, *Clarke & Landers* 7033 (NCU); no precise locality, 1832 (fl & fr), *Drummond* s.n. (K). Arkansas: Johnson Co., Clarksville, 108 m, 23 September 1964 (fr), *Demaree* 51492 (BM). Colorado: *El Paso, 19 km NE. of Colorado Springs, 19 August 1946, *Livingston* 1404 (NA). Connecticut: Hartford Co., Hartford, 17 July 1977 (fl & fr), *Ahles* 83750 (H). Delaware: New Castle Co., Wilmington, 20 September 1949, *Prior* s.n. (K). District of Colombia: Washington, Takoma Park, 23 July 1973 (fl), *Breckle* 2533 (W). Florida: Manatee Co., 5 December 1901 (fl), *Tracy* 7542 (BM). Georgia: Cobb Co., S. of Kennesaw Mt., 278 m, 1 July 1900 (fl), *Harper* 26 (BM, K). Illinois: Jackson Co., 16 July 1978 (fl), *French* 264 (BM, K): *Rock Island Co., near Silvis, 20 October 1961, *Chase* 16862 (ILL). Indiana: *Washington Co., *c.* 4 km E. of Livonia, 1 September 1935, *Deam* 56756 (GH). Iowa: *Johnson Co., 1 September 1909, *Somes* 3752 (US). Kansas: *Douglas Co., 9·5 km S. of Lawrence, 22 July 1959, *McGregor* 14565 (GH, NY, SMU). Kentucky: *Calloway Co., Tobacco, between Murray and Hazel, 22 July 1965, *Austin* 1134 (NOU). Louisiana: St. Tammany Par., Covington, June–August 1832 (fl), *Drummond* s.n. (BM, K); Livingstone Par., Denham Springs, 28 June 1938, *Correll & Correll* 9161 (GH, NY). Maine: Penobscot Co., Orono, 1 August 1908 (fr), *Fernald* 237 (BM, GA*, GH*, K, MICH*, MO*, NY*, TENN*, US*). Maryland: Baltimore Co., Warren Road *c.* 10 km W. of iron bridge over Loch Raven Reservoir, 22 July 1971 (fl), *Underwood, Clebsch & Sharp* 6951 (H). Massachusetts: Hampshire Co., Amherst, Univ. of Massachusetts campus, 12 September 1972 (fr), *Ahles* 76168 (BM, GA*, H, SMU*, TENN*). Michigan: *St. Joseph Co., Portage Lake, 30 July 1953, *Hanes* 87 (MICH). Mississippi: Jackson Co., Vancleave, P.O. Ocean Springs, 3 August 1952, *Demaree* 32475 (NCU, SMU). Missouri: Jasper Co., Galesburg, 24 September 1924 (fr), *Palmer* 26248 (K). New Hampshire: *Rockingham Co., Hampton, 3 September 1938, *Chandler* 718 (MO). New Jersey: *Atlantic Co., Great Swamp Branch, 4·8 km NE. of Hammonton, 16 September 1937, *Fogg* 13672 (MO); Burlington Co., Batsto, 24 July 1849 (fl), *Prior* s.n. (K). New York: *Dutchess Co.: East Hyde Park, 1 August 1949, *Ahles* 1475 (ILL); Tioga Co., Summit Marsh, 16 August 1916 (fl & fr), *Rowlac & Dunlap* s.n. (BM). North Carolina: Pender Co., US 421 between Ward's Corner and Wilmington, 17 July 1960 (fl & fr), *Bell* 17075 (H). Ohio: Clermont Co., Loveland, 5 August 1877 (fl), *James* 264 (K); *Highland Co., Fort Hill, 10 August 1962, *Braun* s.n. (US). Oklahoma: *Le Flore Co., N. Honobia, 3 July 1948, *Robbins* 3116 (NY). Pennsylvania: Alleghany Co., Moon Swamp near Stoops Ferry, 20 August 1902 (fl & fr), *Shafer* 312 (BM). Rhode Island: *Bristol Co., Bristol, 11 August 1961, *Seymour* 19469 (MO, SMU). South Carolina: Abbeville Co., Abbeville District, July 1855 (fl & fr), *Hexamer & Maier* s.n. (BM); *Lancaster Co., Turkey Quarter Creek, just S. of Lancaster, 13 July 1957, *Haesloop & Ahles* 31231 (NCU). Tennessee: Madison Co., U.T. Experiment Stn., 25 August 1947 (fl), *Underwood, Klebsch & Sharp* 6951 (H, TENN*). Texas: Hardin Co., 16 km SE. of Votaw, 23 July 1978 (fl & fr), *Fryxell* 3014 (BM). Utah: ? Co., near Pittsford, 22 August 1922, *Drushel* 4819 (P). *Vermont: Franklin Co., 7·2 km N. of Fletcher, road to Metcalf Pond, 9 August 1983 (fl & fr), *Wood & Boufford* 4732 (BM). Virginia: Princess Anne Co., Munden, 1 August 1934 (fr), *Fernald & Long* 4033 (K). West Virginia: Wirt Co., 1·6 km up Little Kanawha R. from Palestine, Boyers' Pond, 31 August 1941 (fl & fr), *Bartholomew* W1941–1083 (BM). Wisconsin: Grant Co., Boscobel, August 1882 (fr), *Parr* s.n. (H); *La Crosse Co., Farmington Township, 5 September 1958, *Hartly & Thorne* 6173 (GH).

MEXICO. Chihuahua: Mojarachic, 2 August 1939 (fl), *Knobloch* 5770 (US). Coahuila: Caracol Mtn, 33·6 km SE. of Monclova, 19–22 August 1880 (fl & fr), *Palmer* 82 (GH, NY, US). Durango: S. of Ciudad de Durango, El Pueblito, 14 April 1912 (fl & fr), *Patoni-Ochoterena* 486 (MEXU). Hidalgo: Molango, L. Atexca, 1400 m, 27 May 1947 (fl), *Moore* 2958 (GH). Oaxaca: Mun. Tuxtepec, 12 m, 8 April 1967 (fl), *Calderón* 1346 (MEXU*, MO). Puebla: Huauchinango, 28 March 1945 (fl), *Miranda* 3465 (MEXU). Veracruz: near Jalapa, 1200 m, 12 May 1900 (fl), *Pringle* 9203 (BM, ENCB*, G, GH, GOET*, K, MEXU, MICH, MO, NY, P, US, W, Z); Colonia Tres de mayo, 1350 m, 18 March 1974 (fl), *Ventura* 9746 (MICH).

HONDURAS. Copán: road to Dulce Nombre de Copán, 1200 m, 5 September 1975 (fl & fr), *Molina* 31101 (F, MO).

DOMINICAN REPUBLIC. Maria Trinidad Sanchez: Los Fayales, Nagua, 11 April 1965 (fl), *Mareano & Jiménez* 4961 (NY). Samana: Sabana de la Mar, El Limpio, *c.* 300 m, 14 July 1930 (fr), *Ekman* H. 15688 (C, MO, S, US).

COLOMBIA. Caldas: in monte Quindiu, July 1801, *Humboldt & Bompland* s.n. (P-HUM). Cauca: circa Popayan, 1841–1843 (fl), *Hartweg* 923 (BM, FI*, G, K). Nariño: Pasto to Tumaco, Ricaurte, 10 June 1950 (fl), *Espinosa* 2937 (NY). Huila: Pitalito, 19 March 1899 (fr), *Sprague* 252 (BM, K). Valle de Cauca: Cordillera Central, near Sevilla, 17 September 1958 (fl & fr), *Barclay & Juajibioy* 5704 (MO).

ECUADOR. Carchi: alredores de Maldonada, 90 km E. de Tulcán, 1500 m, 5 September 1981 (fl), *Balslev* 1970 (AAU). Loja: La Argelia, 2300 m, 21 May 1946 (fl), *Espinosa* 425 (NY). Morona-Santiago: Colónia Azuay, 2 km from Arapicos, 800–900 m, 18 April 1981 (fr), *Lugo* 6121 (BM, GB). Napo: Río Panteor, SW. of Borja, 1800 m, 22 September 1980 (fl), *Holm-Nielsen* et al. 26664 (AAU). Pastaza: Puyo to Tena, km. 12, 1000 m, 22 September 1969 (fr), *B. & C. Maguire* 61766 (BM, NY). Pichincha: between Chiriboga and Santo Domingo de los Colorados, near Río Pilatón, *c.* 1000 m, 2 July 1955 (fl & fr), *Asplund* 16789 (S). Tungurahua: Agoyan Tunnel, 11 km E. of Baños, 1550 m, 4 June 1968 (fl & fr), *Holm-Nielsen & Jeppesen* 3289 (AAU, C, S).

PERU. San Martin: near Moyobamba, Zepelacio, 1200–1600 m, January 1934 (fl), *Klug* 3493 (F, G, GH, K, MO, NY, S).

PARAGUAY. Misiones: Santiago, Estancia 'Le Soledad', 19 October 1967 (fl & fr), *Pedersen* 8657 (A, C, K, P, S, *SI).

ARGENTINA. Buenos Aires, Delta del Paraná, arroyo Caraguatá, 8 Februry 1937 (fl), *Burkhart* 8216 (GH). Corrientes: Depto Mburucuyá, Estancia 'Santa Jeresa', bank of [río] Santa Lucia, 13 January 1951 (fr), *Pedersen* 944 (A, C, G, K, MO, NY, P, S). Misiones: *Posadas, praderas del Paraná, 25 November 1943, *Burkhart* 14021 (SI).

URUGUAY. Rivera: *Curticeiros ruta 5, 7 January 1960, *Rosengurtt* B8088 (US).

BRAZIL. Minas Geraes: Caldas, Rio Capivary, 20 October 1873 (fl & fr), *Mosén* in *Regnell* 823 (S, *UPS). Rio de Janeiro: Fazenda de Barra Seca, 1816–1821 (fl & fr), *St.-Hilaire* 231 (P); Jardim Botânico do Rio de Janeiro, 1948 (fl),

Brade 2673 (MO, NY). Rio Grande do Sul: near Canoas, N. of Porto Alegre, 29 December 1966 (fl & fr), *Lindeman & de Haas* 3882 (U). Santa Catarina: São Joaquim, São Francisco Xavier, 1200 m, 4 February 1963 (fl & fr), *Reitz* 6670 (US). São Paulo: Mun. Atibaia, road to Bragança Paulistia *c.* 0·5 km N. of road to Atibaia, 24 October 1960 (fl), *G. & L. Eiten* 2408 (NY).

AZORES (introduced). Faial: Viveiro de Falca, 350 m, 27 October 1971 (fr), *Gonçalves* 3730 (BM).

ITALY (introduced). Toscana: Lucca, prope Altopascio, Sibolla, 7 July 1875 (fl & fr), *Levier* (BM, C, FR, JE, K). Piemonte: *[Three localities in 1952: Castello della Mandria, Lago del Castello, Rio Usseia near Ponte Rosso; vide Tosco (1953)].

POLAND (introduced). Poznan: Posen, Theerkeute, July 1885 (fl), *Straehler* s.n. (JE).

U.S.S.R. (introduced). Georgia: Adzharia, Kobuleti [vide Grossheim (1962)].

HAWAIIAN ISLANDS (introduced). Hawaii: Glenwood, 20 July 1926 (fl), *Degener* 2196 (K); Wailuku R., 870–852 m, 27 July 1983 (fl), *Wagner* et al. 4872 (BISH).

NEW ZEALAND (introduced). North Island: *Bay of Islands Co., Puketi State Forest, near logging road from Pirau Ridge to Puketi East Road, 1984, *Bellingham* AK167607 (AK).

Subsp. *mutilum* is variable geographically, but not in such a way that smaller plants from north-eastern U.S.A. and Canada with elliptic rounded leaves can be recognized as var. *parviflorum* (cf. Fernald (1939, 1950), Webb (1980)). This geographical variant, however, seems to have been the form introduced into Paraguay and south-eastern Brazil, hence the origin of St.-Hilaire's epithet *euphorbioides*.

Although the natural range of *mutilum* in North America probably does not extend west of a line roughly from eastern Ontario and Wisconsin to eastern Texas, this subspecies has been recorded from a few localities further west (in Saskatchewan, Oregon, Utah, and Colorado, cf. Rodríguez Jiménez (1973)). In some or all of these it may have been introduced, as it certainly has been in other parts of the world.

Like some other herbaceous species of sect. *Trigynobrathys, H. mutilum* tends to grow in damp, muddy habitats, where the small seeds can adhere to wading birds. Long-distance migrations of such birds are very likely the means whereby it has been introduced into Central and South America, where it seems to have been established in some countries (e.g. Mexico, Ecuador, and Brazil) for a long time. The populations in France (Landes) and Italy (Tuscany) seem also to have been well established when discovered respectively in 1947 (Vivant, 1950) and 1834 (Savi, 1839); but the Piedmontese population (discovered in 1952) may have originated from the Tuscan one. Even so, Tosco (1953) reported it from three separate localities. Whether or not man has played a part in its introduction into some regions is impossible to decide at present.

39b. **H. mutilum** subsp. **latisepalum** (Fern.) N. Robson, **stat. nov.**

Map 34.

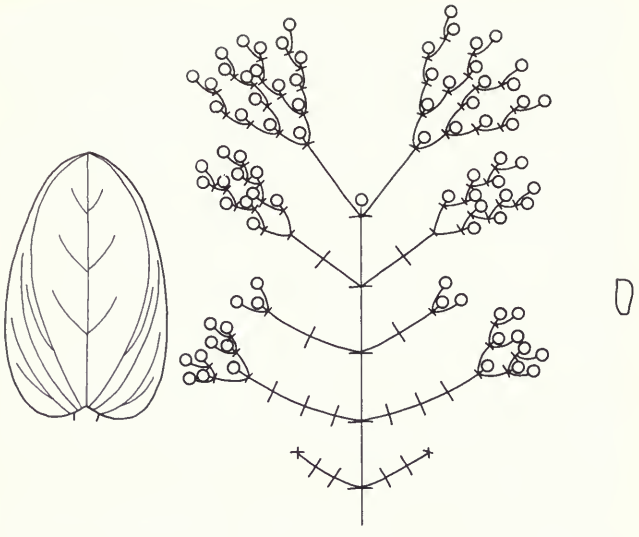
H. mutilum var. *latisepalum* Fern. in *Rhodora* **38**: 372 (1936), *Gray's Man. Bot.* 8th ed.: 1013 (1950). Type: U.S.A. Florida, Duval Co., June, August (fl & fr), *Curtiss* 264* (GH!-holotype; BM!, K!, NY*, P!-isotypes).

H. gymnanthum sensu Rodríguez Jiménez in *Mems Soc. Cienc. nat. La Salle* **33**: 77 (1973), pro parte, quoad syn. *H. mutilum* var. *latisepalum* et spec. cit.

H. mutilum sensu D. H. Webb, *Biosyst. Study Hypericum sect. Spachium in eastern N. Am.*: 189 (1980), pro parte.

Stem with apical internodes well developed, usually longer than that immediately below. *Leaves* broadly ovate or broadly oblong-ovate to suborbicular, paler beneath. *Sepals* ± imbricate, broader above middle. *Inflorescence* branches from 1–4(–6) nodes, with branching diffuse and repeatedly monochasial distally; bracts subulate.

Map 35 Sect. 30: 38. *H. gymnanthum* (part, see also Maps 33, p. 115, and 38, p. 123) ○; 39a. *H. mutilum* subsp. *mutilum* (part) ●.



In scattered localities in the coastal plain from New Jersey (fide Fernald) to Florida and west to Texas.

U.S.A. Georgia: Route 31 between Valdosta and Clyattville, 9 August 1954 (fl), *DeWolf* 1403 (BM). Florida: Highlands Co., U.S. 98 at Kissimmee R., 13 May 1971 (fl), *Baltzell* 3019 (BM); Hillsborough Co., Route 41N *c.* 1·6 km N. of Monatee Co, line, 10 April 1969 (fl), *Sohmer* 5587 (BM); Lake Co., vicinity of Eustis, 16–31 May 1895, *Nash* 870 (G); St. John's Co., near Sampson, 27 November 1929 (fl & fr), *Moldenke* (K). Texas: Cherokee Co., Jacksonville, 4 June 1915 (fl), *Palmer* 7863 (K); Wilson Co., Sutherland Springs, 1879–1880 (fl), *Palmer* 82 (K).

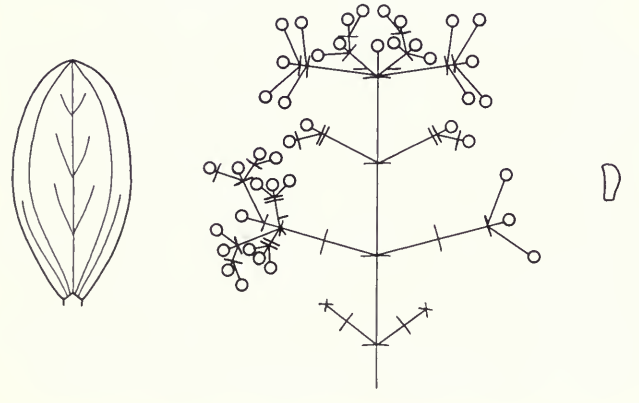
Although Fernald records this subspecies from as far north as New Jersey and Webb states that it occurs [south] from South Carolina, I have seen specimens only from Florida and Texas, apart from the Georgian one cited (*DeWolf* 1403), which tends in inflorescence branching towards subsp. *mutilum*.

39c. **H. mutilum** subsp. **boreale** (Britton) J. M. Gillett in *Can. J. Bot.* **57**: 185 (1979); J. M. Gillett & N. Robson in *Publs natn. Mus. nat. Sci. Can.* No. 11: 17, t. 7 (1981). Type: U.S.A. Maine, York Harbour, August 1888, *Bicknell* s.n. (NY*-lectotype (Webb, 1980)).

Map 34.

H. canadense var. *boreale* Britton in *Bull. Torrey bot. Club* **18**: 365 (1891).

H. mutilum var. *boreale* (Britton) Bickn. in *Bull. Torrey bot. Club* **22**: 213 (1895), comb. invalid., nom. provis.



H. boreale (Britton) Bickn. in *Bull. Torrey bot. Club.* **22**: 213 (1895); Fern. in *Rhodora* **49**: 100 (1947); Utech & Iltis in *Trans. Wis. Acad. Sci. Arts Lett.* **58**: 339, map 9, ff. 1, 5, 6 (1970); Rodríguez Jiménez in *C. r. Soc. Biogéogr.* **432**: 87, map 1 (1972), in *Mems Soc. Cienc. nat. La Salle* **33**: 64, ff. 3f. 12B (1973); D. H. Webb, *Biosyst. Study Hypericum sect. Spachium in eastern N. Am.*: 174 (1980).

H. boreale var. *callitrichoides* Fassett in *Rhodora* **41**: 376 (1939); Utech & Iltis in *Trans. Wis. Acad. Sci. Arts Lett.* **58**: 343 (1970). Type: U.S.A., Maine, Jefferson, Damariscotta Lake, 22 August 1936, *Fassett* 18068 (WIS*-holotype).

Sarothra borealis (Britton) Y. Kimura in Nakai & Honda, *Nova fl. jap.* **10**: 232 (1951).

Icones: Utech & Iltis in *Trans. Wis. Acad. Sci. Arts Lett.* **58**: 341, f. 5 (1970); J. M. Gillett & N. Robson in *Publs natn. Mus. nat. Sci. Can.* No. 11: 19, t. 7 (1981).

Stem with apical internode shorter than those below or almost absent. *Leaves* broadly ovate or oblong-ovate to narrowly elliptic, not paler beneath. *Sepals* not imbricate or broader above. *Inflorescence* branches from 2–6 nodes, with branching mostly dichasial, bracts foliar.

Eastern Canada and north-eastern U.S.A. from Newfoundland west to Manitoba, Wisconsin, and Minnesota and south to south-eastern Virginia.

CANADA. Manitoba: Lake Winnipeg, n.d. (fl & fr), *Richardson* s.n. (K). New Brunswick: ? Co., Torryburn near St. John, 14 July 1955 (fl), *Scoggan* 12422 (W). Newfoundland: valley of Exploits R., Grand Falls, 15 August 1911 (fl & fr), *Fernald & Wiegand* 5846 (BM, GH*, P); St. John's, Bally Haily Bog, 6 August 1894 (fl & fr), *Robinson & Shrenk* 186 (G, K, P). Nova Scotia: Shelburne Co., Sable Island, 15 August 1913 (fl & fr), *St. John* 1274 (P). Ontario: Algoma Co., Firesand Creek, 12·8 km E. of Wawa, 7 August 1971 (fl), *Garton* 14703 (H). Kenora Co., Ignace, 6·5 km NW. near old Osaquan rly. stn., 5 August 1961 (fl & fr), *Baldwin* 9341 (H). Nippissing Co., Opeongo, Madawasca, 27 August 1940 (fl), *Cain* s.n. (W). *Sudbury Co., Cloche Mts., near East Knob, beach near Hunt Pt., 28 August 1932, *Grassl* 1965 (MICH, NY). Thunder Bay Co., N. end of Onion Lake at Current R. entrance, 18 July 1972 (fl), *Garton* 15067 (H). Prince Edward Island: Queens Co., Mermaid Lake, 9·6 km NE. of Charlottetown, 31 July 1953 (fl), *Smith* 288 (BM, NY*). Quebec: Abitibi Co., Privat Twp. to Proulx Mills, 14·4 km SE. of Taschereau at Lois R., 29 August 1952 (fr), *Baldwin* 4297 (GH*, H). Argenteuil Co., Saint-Adolphe, 15 July 1947 (st), *Rolland-Germain* 42 (BM, GH*, MICH*, NY*, US*). Ascot Co.: Sherbrooke, près du chemin Ste-Catharine, 3 August 1978 (fl & fr), *Brisson* 78436 (H). Chicoutimi Co., vallée de la R. Sainte-Marguerite, 5 August 1964 (fl & fr), *Cayouette* 7019 (H).

U.S.A. Connecticut: *New Haven Co., Southford Falls Park, 17 August 1941 *Catherine* 115 (NY). Delaware: *Kent Co., 3·2 km N. of Milford, Tubmill Pond, 31 August 1935, *Tatnall* 2760 (GH). Indiana: Porter Co., Mud Lake Marsh, Baileytown, 27 September 1959 (fr), *Bennett* 6968 (G, W). Maine: Penobscot Co., Orono, 12 August 1908 (fl & fr), *Fernald* Pl. Exsicc. Gray. 236 (BM, G, GA*, GH*, MICH*, MO, NY*, P, TENN*, US*, W). Massachusetts: Hampshire Co., Florence (Northampton), 24 July 1977 (fl & fr), *Ahles* 84292 (BM, H). Michigan: Presque Isle Co., Black Lake, State For. H.Q., 13 August 1933 (fl), *Gleason & Gleason* 330

(G, H, NY*, SMU*). Minnesota: *St. Louis Co., Janet Lake, along Hwy 73, S. of Hibbing, 22 September 1950, *Lakela* 12254 (ILL). New Hampshire: Carroll Co., Jackson, Fernald Farm, 450 m, 26 September 1907 (fr), *Forbes* s.n. (BM, W). New Jersey: Morris Co., Mt Arlington, 21 August 1904 (fl & fr), *Mackenzie* 895 (G). New York: Essex Co., Newcomb, Lake Harris, 9 August 1925 (fl & fr), *House* 8513 (P). Pennsylvania: *Susquehanna Co., W. shore of Ball Lake, 2·4 km SSE. of Ararat, 25 August 1950, *Glowenke* 11489 (NY). Rhode Island: *Crescent Beach, Block I., 20 August 1913, *Fernald & Long* 9888 (GH, NY). Vermont: Franklin Co., Charcoal Creek, Swanton, 26·4 m, 18 August 1911 (fl), *Blake* 2929 (G). Virginia: *Princess Anne Co., Chesapeake Beach, 13 September 1946, *Fernald* et al. 15304 (MO, NY, US). Wisconsin: Bayfield Co., Siskowitt Lake S. of Cornucopia, 10 July 1938, *Fassett* et al. 17192 (F*, NY*, P-photograph).

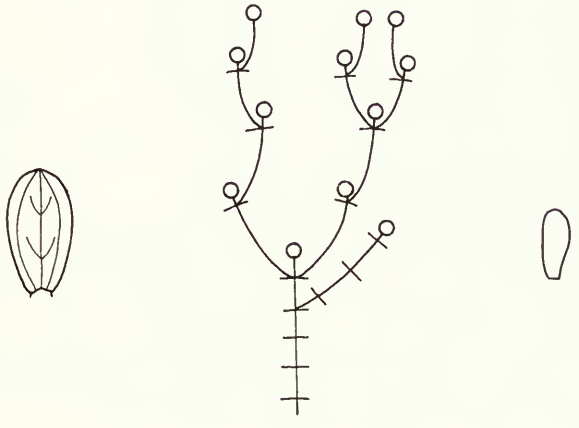
Webb (1980) pointed out that the specimen selected as lectotype of *H. boreale* by Rodríguez Jiménez (1973), viz. *Robinson & Shrenk* 186, was collected in 1894, three years after the publication of Britton's original description, and cannot therefore be a lectotype. Although Britton's original diagnosis is so short as to have raised doubts as to its validity, Webb shows that Bickell's (1895) discussion 'seems to remove any doubt concerning the plant to which Britton intended the name *H. canadense* var. *boreale* to be applied'. Britton's name is thus to be regarded as validly published, and Webb's discovery of what is believed to be the original material further substantiates Britton's concept.

Where subsp. *boreale* grows submersed, the plants are almost always sterile with elongated stems and suborbicular leaves. Utech & Iltis (1970) have observed that populations of such plants (forma *callitrichoides* Fassett) intergrade shorewards with typical subsp. *boreale*.

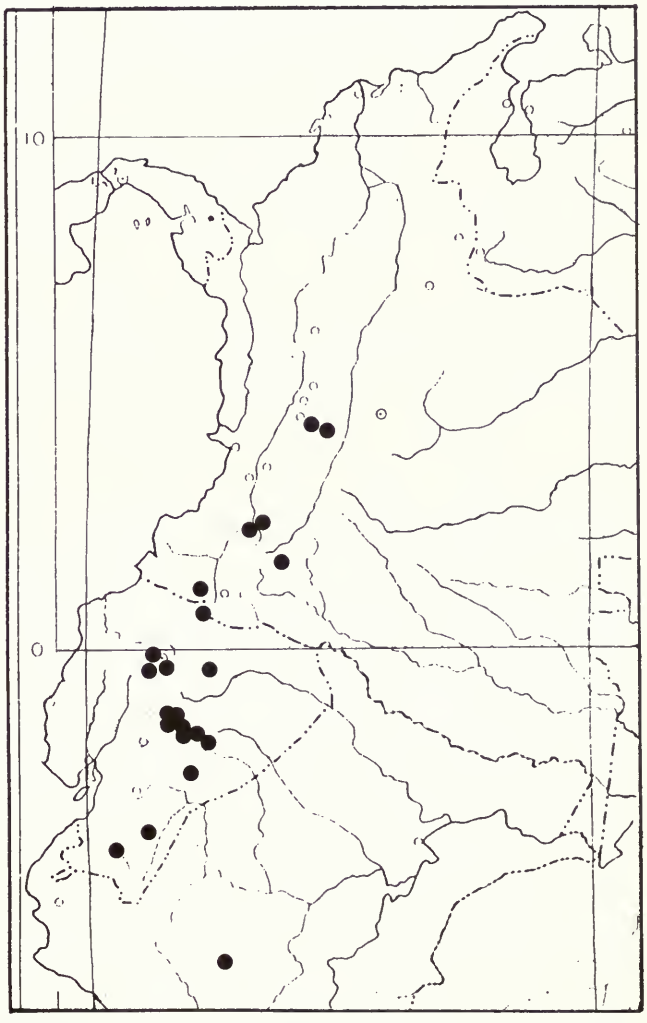
40. **Hypericum arenarioides** A. Rich., *Ess. fl. Cub.*: 238 (1845), in Sagra, *Hist. fis. Cuba, Bot.* **10**: 97 (1850); Griseb., *Cat. pl. cub.*: 40 (1866); Léon & Alain, *Fl. Cuba* **3**: 318 (1953): Lippold in *Wiss. Z. Friedr.-Schiller Univ. Jena* (Math.-Nat. R.) **19**: 378, f. 1 (1970). Type: Cuba, Pinar del Rio, circa Guanimar, n.d. (fr), *Sagra* s.n. (P!-holotype; F!).

Map 34.

H. mutilum sensu Rodríguez Jiménez in *C. r. Soc. Biogéogr.* **432**: 89, carte 3 (1972), in *Mems Soc. Cienc. nat. La Salle* **33**: 79 (1973); D. H. Webb, *Biosyst. Study Hypericum sect. Spachium in eastern N. Am.*: 189 (1980), pro parte omnes quoad syn. *H. arenarioides* et spec. Cub. cit.



Annual herb 0·04–0·1(–0·2) m tall, decumbent to ascending and rooting, with stems solitary and unbranched below inflorescence or rarely branched at the base. *Stems* green, 4-angled, sometimes ancipitous above, with lines smooth; internodes 5–13 mm long, exceeding leaves, the uppermost not contracted. *Leaves* sessile, spreading, not tetrastichous, persistent; lamina 4–6 × 2–4 mm, elliptic or oblong to obovate, not cucullate, midrib slightly prominent beneath, smooth, concolorous, membranous; apex rounded, margin plane, base rounded to cuneate or angustate, not sheathing, free; basal or near basal veins 3–5, sometimes with less prominent ascending branches, tertiary venation obscure; laminar glands dense, punctiform, not prominent. *Inflorescence* 1–5-flowered, often pseudo-dichotomous at first then (dichasial to) monochasial, with flowering branches from up to 3 nodes below; pedicels 2–3 mm long; uppermost leaves and bracts foliar. *Flowers* 3–4 mm in diam., stellate. *Sepals* 2–4 × 0·5–1·5 mm (? enlarging in fruit), unequal, not or scarcely imbricate, narrowly oblong to spathulate or oblanceolate, rounded, margin entire; veins 3–5, unbranched, not or only midrib prominent; glands linear, distally punctiform. *Petals* yellow, not veined red, *c.* 1·8–3 × 0·5–1·5 mm, shorter than sepals, oblong; apiculus and glands absent. *Stamens c.* 5–12, irregularly grouped, longest 1·5–2 mm long, *c.* 0·7 × petals. *Ovary* 1–1·2 × 0·8–1 mm, ellipsoid-subglobose; styles 3, *c.*



Map 36 Sect. 30: 39a. *H. mutilum* subsp. *mutilum*, western South America.

0·4–0·5 mm long, *c.* 0·4 × ovary; stigmas narrowly capitate. *Capsule* 2·2–3 × 1·5–2·2 mm, cylindric-ellipsoid to ellipsoid-subglobose, about equalling sepals. *Seeds c.* 0·5 mm long; testa very finely linear-scalariform.

Damp places; lowland.

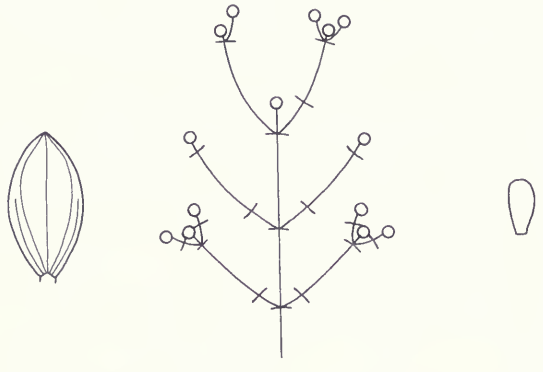
Cuba (Pinar de Rio, La Habana).

CUBA. Pinar de Rio: Herredura, 5 October 1920 (fr), *Ekman* 11592 (S); arr. Mantua, Damuji, 2 June 1920 (fl), *Ekman* 11072 (S). La Habana: ad 'Laguna Ariguanabo', 28 March 1920 (fl & fr), *Ekman* It. Regnell II 10588 (G, K, NY, S); Río Seco, – December – (fr), *Wright* 3516 (GH, K, NY, S, US).

H. arenarioides is clearly closely related to *H. mutilum*, but it differs from *H. mutilum* subsp. *latisepalum* (the nearest mainland form) by the pseudo-dichotomous inflorescence branching, as well as by the decumbent to ascending habit. One Floridan specimen of *H. mutilum* subsp. *latisepalum* (*Tracy* 7542 (BM)) has an initial pseudo-dichotomous inflorescence branch, and so the inflorescence character is not absolutely diagnostic.

41. **Hypericum pleiostylum** Rodríguez Jiménez [in *C. r. Soc. Biogéogr.* **432**: 91, carte 7 (1972) nomen], in *Mems Soc. Cienc. nat. La Salle* **33**: 118, ff. 6E, 13c (1973). Type: Brazil, Minas Geraes, Caldas, November 1869, *Regnell* III 1732 (UPS-holotype).

Map 37.



Icon: Rodríguez Jiménez, tom. cit.: 69, f. 13C (1973).

Annual herb 0·10–0·26 m tall, erect or ascending from decumbent rooting base, with stems branched from or near the base, usually with up to 6 pairs branches above middle. *Stem* green to reddish-brown, 4-angled, sometimes ± ancipitous above, with lines smooth; internodes 8–25 mm, the uppermost not shorter, exceeding leaves. *Leaves* sessile, spreading, not tetrastichous, persistent; lamina 3–8 × 2–3·5 mm, ovate-deltoid to elliptic, plane, not cucullate, midrib prominent beneath, smooth, concolorous, glaucescent, membranous; apex rounded, margin plane, base rounded to cuneate, not sheathing, free; basal veins 3–5(–7), with less prominent midrib branches; tertiary reticulum dense, obscure; laminar glands rather dense, punctiform, prominent. *Inflorescence* 3–5(–7)-flowered, terminal, branching regularly dichasial/monochasial, sometimes with flowering branches from up to 3 nodes below, the whole fusiform-cylindric; pedicels *c.* 5 mm long; bracts foliar. *Flowers c.* 6–7 mm in diam., stellate. *Sepals* 2–2·5 × 0·5–1·2 mm, subequal to unequal, sometimes imbricate distally, obovate or oblanceolate to elliptic or narrowly oblong, apiculate-obtuse, veins 3, unbranched, not prominent; glands all or mostly linear. *Petals* golden (?) yellow, not veined red outside, 3–4 × 1–1·2 mm, *c.* 1·6–2 × sepals, oblong; apiculus and glands absent. *Stamens* 25–30, 5-fascicled or irregularly grouped, longest 1–1·5 mm long, *c.* 0·7 × petals. *Ovary c.* 1 × 0·6 mm, ovoid-ellipsoid; styles 5(6–8), *c.* 0·8 mm long, *c.* 0·8 × ovary; stigmas scarcely capitate. *Capsule* 2·5–3 × 2–2·5 m, broadly cylindric to globose, *c.* 1·5 × sepals. *Seeds c.* 0·7 mm long; testa finely and rather shallowly linear-scalariform.

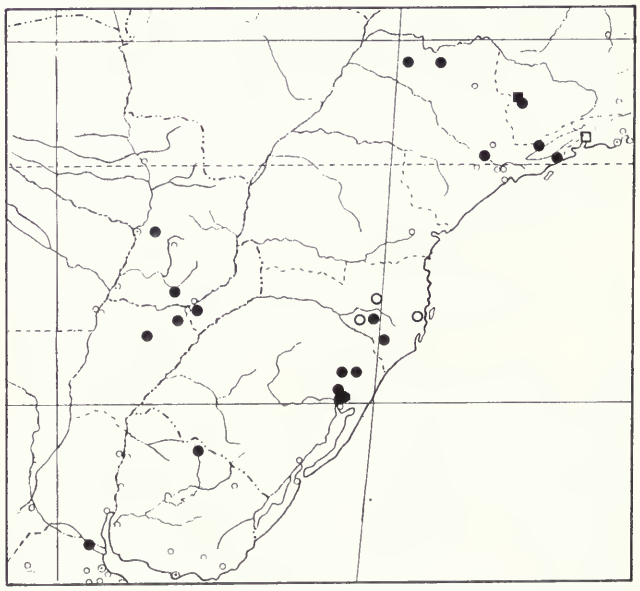
'Campo'; lowland.

Brazil (Minas Geraes, Rio de Janeiro).

BRAZIL. Minas Geraes: Caldas, 1845 (fl & fr), *Widgren* in *Regnell* 450 (S, US); ibid., 20 October 1873 (fl & fr), *Mosén* in *Regnell* 823 (P); Caldas, Rio Capivary, 20 November 1873 (fl & fr), *Mosén* in *Regnell* 822 (S). Rio de Janeiro: Itatiaia, 20 November 1876 (fl & fr), *Glaziou* 8284 (K, P).

H. pleiostylum is clearly derived from the small-leaved Brazilian form of *H. mutilum* described by St.-Hilaire as *H. euphorbioides*, i.e. it is a neo-endemic. It differs from that form not only in the increased number of styles and ovary loculi (making the fruit globose rather than cylindric), but also in having an elongate terminal stem node (as in *H. mutilum* subsp. *latisepalum*) and foliar bracts (as in *H. mutilum* subsp. *boreale* and *H. arenarioides*). Rodríguez Jiménez (1973) queried the Rio de Janeiro locality, possibly because the localities on some other Glaziou labels have been shown to be unreliable (c.f. Wurdack, 1970).

42. **Hypericum japonicum** Thunb. ex Murray, *Syst. veg.* 14th ed.: 702 (July 1784); Thunb., *Fl. jap.*: 295 (August 1784); Lam., *Encycl.* **4**: 163 (1797); Choisy, *Prodr. monogr. Hypéric.*: 48 (1821), in DC., *Prodr.* **1**: 543 (1824); Blume, *Bijdr. fl. Ned. Ind.* **1**: 143 (1825); D. Don, *Prodr. fl. nepal.*: 291 (1825); Royle, *Ill. bot. Himal. Mts.*: 131, t.24. f.2 (1834); Choisy in Zoll., *Syst. Verz.* **2**: 151 (1854); Dyer in Hook. f., *Fl. Brit. India* **1**: 256 (1874); Franchet & P. A. L. Savat., *Enum. pl. Jap.* **2**: 300 (1878); Forbes & Hemsley in



Map 37 Sect. 30: 39a. *H. mutilum* subsp. *mutilum*, eastern South America ●, ○ (literature records); 41. *H. pleiostylum* ■ (confirmed record), □ (doubtful record).

J. Linn. Soc. (Bot.) **23**: 73 (1886); Trimen, *Handb. fl. Ceylon* **1**: 93 (1893); R. Keller in *Bull. Herb. Boissier* **5**: 641 (1897); Bailey, *Queensl. fl.* **1**: 101 (1899); H. Léveillé in *Bull. Soc. bot. Fr.* **53**: 501 (1906), in op. cit. **54**: 593 (1908); R. Keller in *Bull. Herb. Boissier* II, **8**: 185 (1908); Gaignepain, *Fl. Gen. Indo-Chine* **1**: 286 (1908); R. Keller in *Bot. Jb.* **44**: 49 (1909); Ridley in *J. Straits Brch R. Asiat. Soc.* **54**: 16 (1910); Becker, *Schoolflora Java*: 86 (1911); Hayata, *Icon. pl. formos.* **1**: 78 (1911); Gamble, *Fl. Madras* **1**: 70 (1915); Ridley in *Trans. Linn. Soc. Lond.* (Bot.) II, **9**: 20 (1916); Lauterb. in *Bot. Jb.* **58**: 5 (1922); R. Keller in *Bot Jb.* **58**: 196 (1923); E. G. Baker in *J. Bot., Lond.* **62**, suppl.: 8 (1924); Craib, *Fl. siam.* **1**: 111 (1925); R. Keller in Engl. & Prantl, *Nat. Pflanzenfam.* 2nd ed. **21**: 181 (1925); Henderson in *Gard. Bull. Str. Settl.* **4**: 222 (1928); Hand.-Mazz., *Symb. sin.* **7**: 404 (1931); Burkill, *Dict. Econ. Prod. Mal. Pen.*: 1217 (1935); Karjilal & Dao, *Fl. Assam.* **1**: 102 (1935); Allan in *N.Z. J. Agr.* **52**: 213, f.6 (1936); Y. Kimura in *Bot. Mag., Tokyo* **54**: 87 (1940); Corner, *Wayside trees of Malaya*:324 (1940); Banerji in *J. Bombay. nat. Hist. Soc.* **51**: 774 (1953); Henderson, *Malayan wild flowers*: 34, f.24 (1954); Hundley & Ko, *List trees, shrubs, etc. Burma*: 19 (1961); Ohwi, *Fl. Japan* (Engl. trans.): 631 (1965); Backer & Backhuizen v. d. Brink Jr., *Fl. Java* **1**: 382 (1963); Banerji in *Rec. bot. Surv. India* **19** (2): 27 (1966); Shrestha in *Bull. Dep. med. Pl. Thapathali* **1**: 7 (1967); C. R. Rao in *Indian Forester* **93**: 43 (1967); Rodríguez Jiménez in *Mems Soc. Cienc. nat. La Salle* **33**: 93 (1973); N. Robson in *Blumea* **20**: 267 (1973), in *Fl. Males.* I, **8**: 27 (1974); Ghandi in Soldanha & Nicolson, *Fl. Hassan Distr.*: 127 (1976); N. Robson in Li et al., *Fl. Taiwan* **2**: 633, t.430 (1976), in Hara & Williams, *Enum. fl. pl. Nepal* **2**: 62 (1979); van Royen, *Alpine fl. New Guinea* **3**: 1481, t.119 (1982); N. Robson & Long in Grierson & Long, *Fl. Bhutan* **1** (2): 376 (1984). Type: Japan, Honshu, 'in insula Nipon', n.d. (fl), *Thunberg* s.n. (S-holotype; BM!-isotype); see Kimura (1980).

Map 39A, B.

H. chinense Osbeck, *Dagb. Ostind. resa*: 244 (1757); Merrill, in *Am. J. Bot.* **3**: 588 (1916), non *H. chinense* L. (1759) nec Retz. (1789). Type: China, Kwangtung, Danish Island, 24 October 1751 (fl & fr), *Osbeck* s.n. (S!-holotype). See discussion on p. 127.

H. mutilum sensu Maxim., *Mél. Biol.* **11**: 171 (1881), in *Bull. Acad. Sci. St.-Petersb.* **27**: 436 (1881) et auct. plur.

Brathys japonica (Thunb. ex Murray) Wight, *Ill. Ind. Bot.* **1**: 113 (1838–1840).

B. japonica [var.] β *acutisepala* Miquel, *Fl. ned. Ind.* **1** (2): 514 (1859). Type: as for *Hypericum japonicum.*

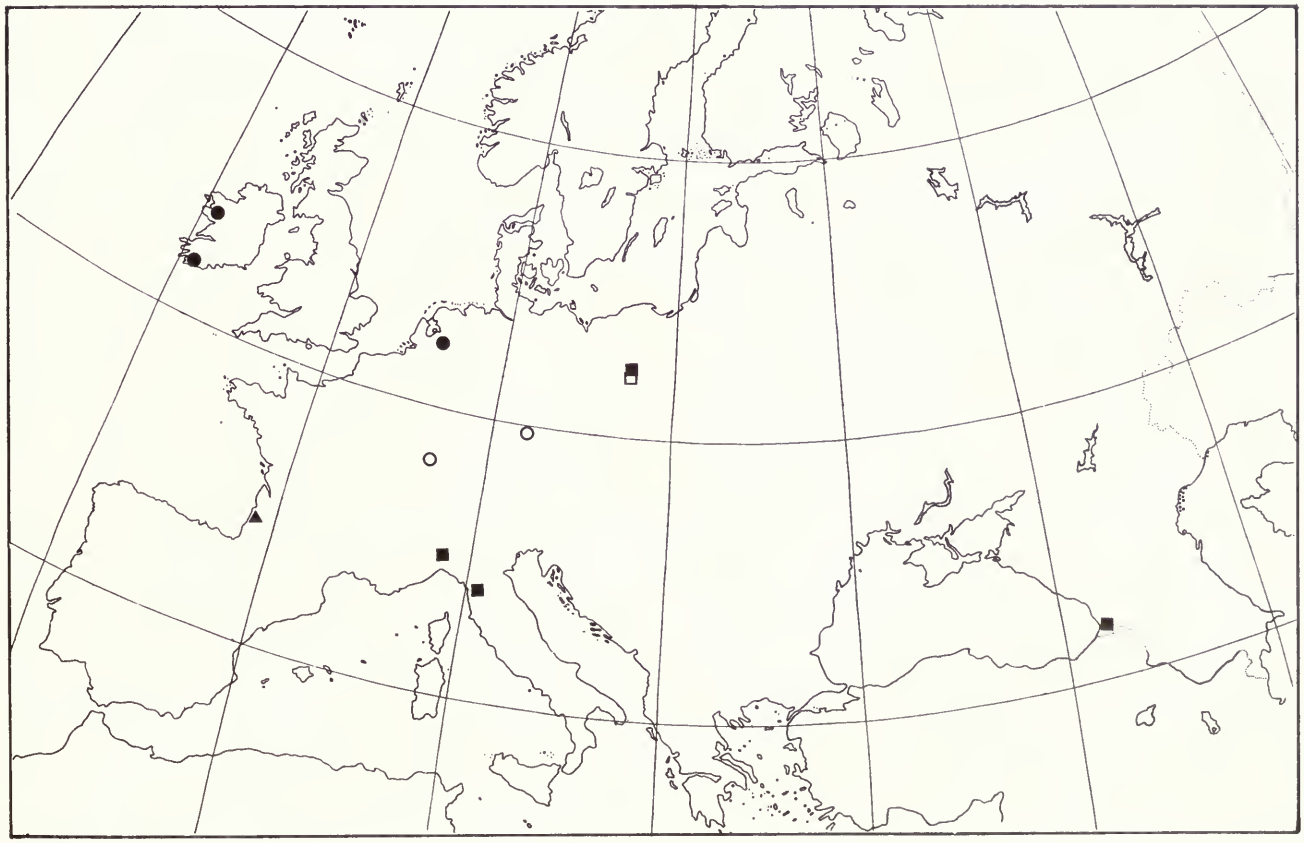
Hypericum japonicum var. *typicum* Hochr. in *Candollea* **2**: 436 (1925); Y. Kimura in *Bot. Mag., Tokyo* **54**: 87 (1940). Type as for *H. japonicum.*

Sarothra japonica (Thumb. ex Murray) Y. Kimura in Nakai & Honda, *Nova fl. jap.* **10**: 235 (1951); Satake et al., *Wild fls. of Japan* **2**: 119, t. 119–4 (1982)[12].

Icones: see under Variants (pp. 127–130).

Annual herb, 0·02–0·5 m tall, erect to decumbent or prostrate and rooting at the base or along stem, unbranched or branched from the base and sometimes also distally and

[12]For further synonymy, see pp. 128–130.



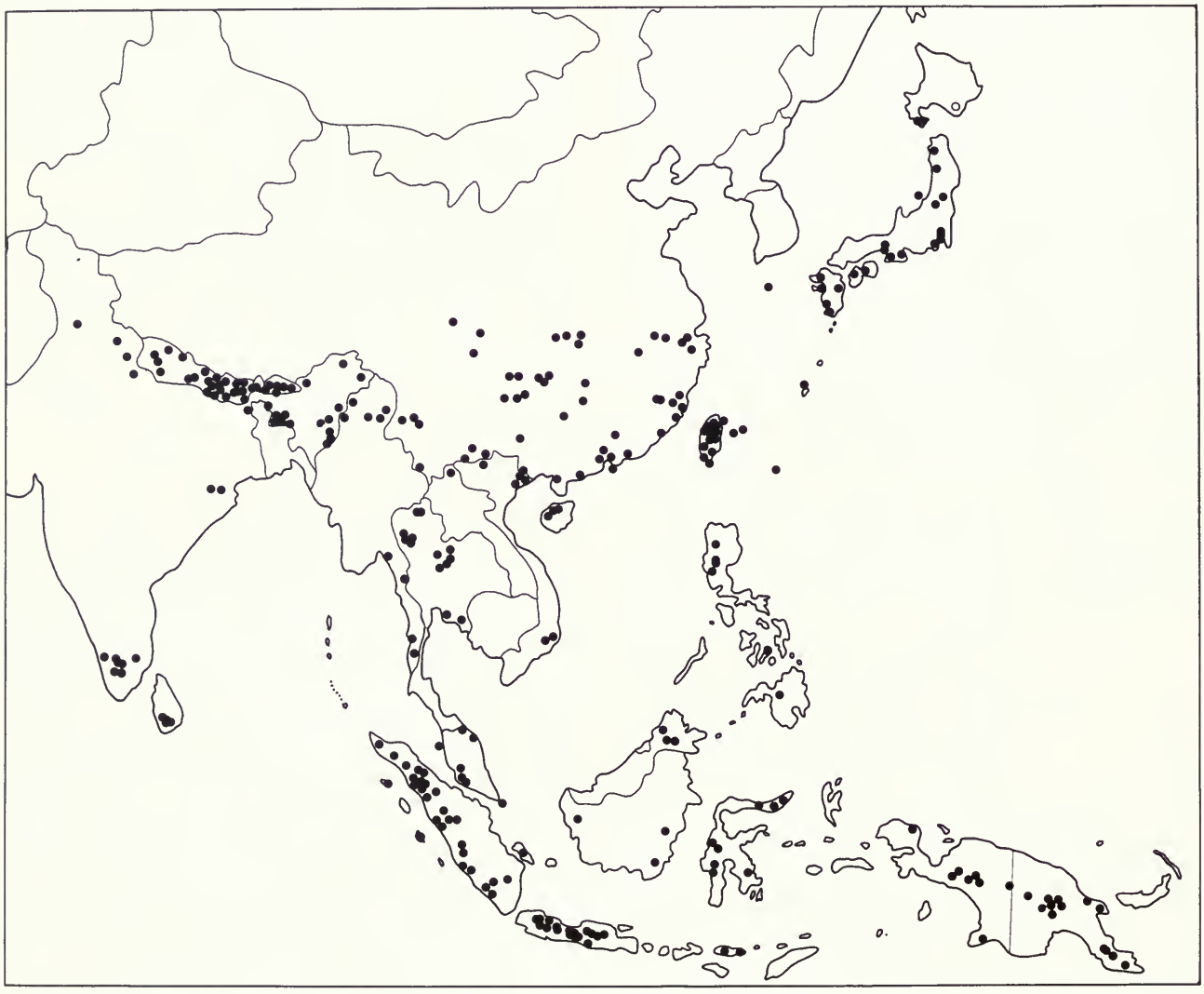
Map 38 Sects. 29 and 30, introductions into Europe and SW. Asia. Sect. 29: 88. *H. gentianoides* ▲. Sect. 30: 36. *H. majus* ○; 37. *H. canadense* ●; 38. *H. gymnanthum* □; 39a. *H. mutilum* subsp. *mutilum* ■. See also Maps 5, 8, 31–37, 39.

(when decumbent to prostrate) elsewhere. *Stem* green, 4-angled, ancipitous above, with lines smooth; internodes 2–52 mm long, usually exceeding leaves. *Leaves* sessile, spreading, not tetrastichous, persistent; lamina 2–18 × 1–10 mm, broadly ovate-deltoid or ovate to oblong or oblong-lanceolate or elliptic or suborbicular or more rarely oblanceolate or obovate-spathulate, plane, not cucullate, midrib slightly prominent beneath, smooth, paler or sometimes glaucous beneath, membranous; apex obtuse to rounded, margin plane, base cordate-amplexicaul to cuneate or more rarely attenuate, not sheathing, free; basal veins 1–7, sometimes with obscure ascending branches, tertiary reticulation apparently absent; laminar glands dense, punctiform, not prominent. *Inflorescence* 1–*c.* 30-flowered, terminal, branching regularly dichasial/monochasial or rarely pseudo-dichotomous at first, sometimes with flowering branches from up to 3 nodes below or sympodial with flowers apparently lateral, the whole diffuse; pedicels (1·4–)2–14 mm long; bracts lanceolate-subulate to foliar. *Flowers* 4–8 mm in diam., stellate. *Sepals* 2–5·5 × 0·5–2 mm, subequal to unequal, imbricate, narrowly oblong or rarely lanceolate to elliptic or obovate, acute or obtuse to rounded, margin entire; veins 3–5, unbranched, often with midrib ± promiment; glands linear, distally punctiform. *Petals* pale to bright yellow or orange, not veined red outside, 1·7–5 × 0·8–1·8 mm, 0·8–1·3 × sepals, obovate to oblong or elliptic; apiculus obsolete or absent; glands absent. *Stamens* 5–30, irregular or in 5 obscure groups when few, longest 1·5–2·8 mm, 0·4–0·8 × petals. *Ovary* 1–1·5(–1·8) × 0·5–1 mm, ± broadly ovoid to subglobose; styles (2–)3, 0·4–0·8(–1) mm long, 0·4–0·6 × ovary; stigmas rather broadly capitate. *Capsule* (2–)2·5–6 × 1·3–2·8 mm, cylindric to globose, slightly shorter than or more rarely equalling or exceeding sepals. *Seeds c.* 0·5 mm long; testa finely linear-scalariform. 2n = 16, see Robson & Adams (1968).

Ditches, marshes, stream margins, rice fields, also short grassland and roadsides, never shaded; 0–3400 m.

Japan, South Korea, Taiwan, Philippines, and south-eastern China to Nepal, NW. and S. India, Sri Lanka, Burma, Thailand, Malaya to New Guinea, south-eastern and south Australia, and New Zealand. The record for Hawaii is an error.

JAPAN. Hokkaido: Hakodate, September 1885 (fl), *Bisset* 2798 (BM); Prov. Iburi, Tomakomai, 28 August 1914 (fr), *Kudo* in HTU 77203 (TAI). Honshu: Tohoku Distr., in basi Iwagisan, August 1905 (fl & fr), *Faurie* 6903 (BM, W); Chubu



Map 39 Sect. 30 A: 36. *H. majus* (Japanese introduction, see also Map 31, p. 110) ○; 42. *H. japonicum* (northern) ●. B (p. 125): 42. *H. japonicum* (southern) ●. Approximate distribution limits in Australia, from literature

Distr., Sado-shima, 27 September 1898 (fl & fr), *Faurie* 1363 (K); Tokyo Distr., Musashi, Ogikubo, 10 October 1910 (fr), *Sakurai* s.n. (H); Kinki Distr., Hyogoken, Rokukosan, Kahutoyama, 23 September 1939 (fl & fr), *Isikawa-Einosuke* in HTU/077068 (TAI). Shikoku: Matsuyama, 14 September 1893 (fr), *Faurie* 11689 (K). Kyushu: Unzen, 15 July 1933 (fl & fr), *Hara* N.55/33 (K); Kagoshima, Satsuma, 13 August 1930 (fl & fr), *Suzuki* TU/077031 (TAI).

RYUKYU ISLANDS. S. Luchu Islands, Iriomote I., 60 m, August 1934 (fl & fr), *Gressitt* 549 (BM); Insl Ishigaki, n.d. (fl), *Iwazaki* 2717 (TAI).

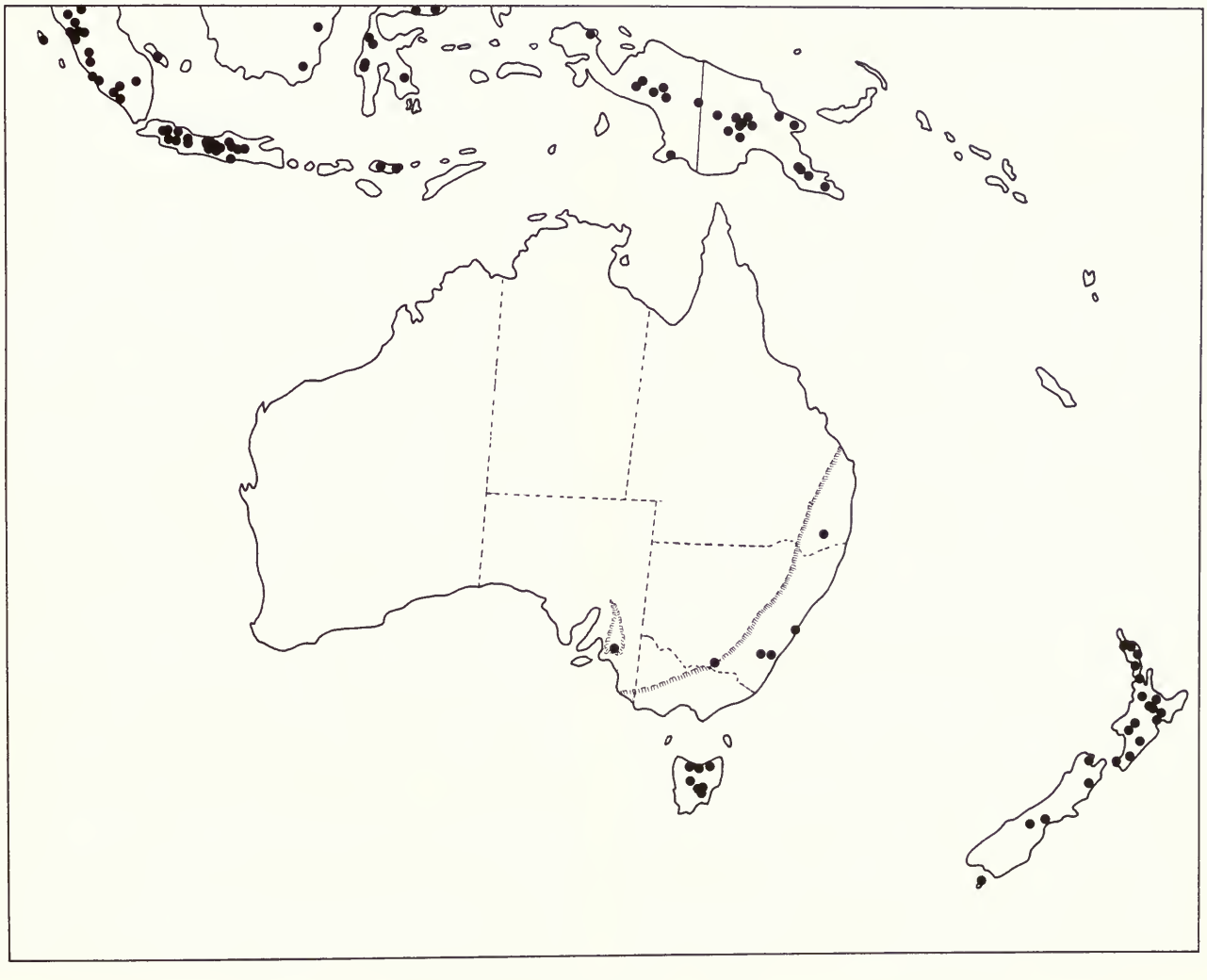
KOREA. Quelpaert Island [Cheju Do]: Hogno, August 1911 (fl & fr), *Taquet* 5426 (BM, E). South Korea: Fusan [Pusan], 4 October 1901, *Faurie* 162 (E).

TAIWAN. Taipei: Chi-shing-shan (Mt. Seven Star), 700–900 m, 1 November 1968 (fr), *Mizushima & Hsu* 5078 (TAI). Taoyuan: Nankan, Toen, 5 May 1929 (fl & fr), *Kudo* 574 (TAI). Hsinchu: Sinchu, 30 April 1971 (fl & fr), *Liau* 409 (TAI). Ilan: Rato, 25 March 1930 (fl), *S. Suzuki* 3692 (TAI). Taichung: Taichu City, Taichu Park, 27 June 1942 (fr), *Morimoto* 521 (TAI). Nantou: Zitugetutan, 13 October (fl & fr), *Satow* 188 (TI). Hualien: Luan-shan, 700–1200 m, 16 August 1967 (fr), *Hsu* 3525 (TAI). Yunlin: Keisyu, Einsuikoseito, 29 July 1934 (fl), *Suzuki* 4547 (TAI). Pingtung: Tashulinshan, June 1927 (fl & fr), *Yamamoto* s.n. (TI).

CHINA. Anhui: Chui Hwa Shan, 500 m, 6 August 1934 (fl), *Fan & Li* 126 (K). Zhejiang: Tung Yang, between Ping Yung and Tai Suan, 500–900 m, 21 July 1924 (fr), *Ching* 2197 (BM, K, US). Fujian: Minhow Hsien, Pehling, 5 August 1923 (fl), *Chung* 2141 (K, SING). Guangdong: Tsingshing Distr., Naam Kwan Sahn, 24 April 1932 (fl), *Tsang* 20319 (BO, K). Hong Kong: New Territories, Shatin, Dog Stomach Village, 28 November 1968 (fr), *S. Y. Hu* 6276 (K). Hainan: Ch'angkiang Distr., Ka Chik Shan, 27 April 1933 (fr), *Lau* 1650 (BM). Gwangxi: Kweilin, 220 m, 1979 (fl & fr), *Wan & Chow* 79026 (BM). Hubei: without precise locality, 1885–1888 (fl & fr), *Henry* 7373 (BM). Jiangxi: Lushan, 1975 (fl & fr), *Cheng* 188 (BM). Hunan: Changning Hsien, I-Chia-Ao, 23 June 1935 (fl & fr), *Fan & Li* 6 (BM, BO, L). Guizhou: Fan Ching Shan, Ta Ho Yen, 900 m, 20 October 1931 (fl), *Steward, Chiao & Cheo* 782 (K, L, NY*, SING). Sichuan: Omei Hsien, 9 June 1957, *Chen* et al. 3346 (SZ). Yunnan: Dali Xian, Diancang Shan W. of Dali, 12 August 1984 (fl), *Sino-Amer. Bot. Exped.* 1012 (BM, GH).

BURMA. Kachin: North Triangle, Hkinlum, 1200 m, 9 April 1953 (fl & fr), *Kingdon Ward* 20643 (A, BM); Myitkina Distr., Black Rock, Hpimaw road, 1800 m, 14 April 1938 (fl), *Kermode* 17045 (K). Shan: Maymo Plateau, 1050 m, August–September 1912 (fl & fr), *Lace* 5900 (A, E, K). Tenasserim: Martaban, 1827 (fl), *Wallich* 4811 G (BM, K); Panchung, 1200 m, 9 April 1877 (fl & fr), *Gallatly* 6761 (BM).

INDIA (N). Tripura: Sadar Sub-Division (fide Deb, 1981:



362). Manipur: Ukhrul, 1800 m, 1 April 1948 (fl), *Kingdon Ward* 17189 (A, BM, NY). Nagaland: Kohima, 900–2100 m, May–June 1886 (fl), *Prain* s.n. (W). Meghalaya: Khasi Hills, *c.* 1800 m, 11–14 April 1954 (fl & fr), *Chand* 7253 (L). Assam: Mangeldai to foot of Bhutan Himalaya, 30–90 m, 1 December 1855 (fl & fr), *Schlagintweit* s.n. (BM). Arunachal Pradesh: no records. West Bengal: Cooch Behar, Gosani-mari, 16 April 1941 (fl & fr), *Mukerjee* 564 (BO). Orissa: Sambalpur Distr., Khariar, Sonbera range, 810 m, 15 April 1949 (fl & fr), *Mooney* 3302 (K). Uttar Pradesh: Kumaun, Almora, 1560 m, n.d. (fl & fr), *Strachey & Winterbottom* 8 (BM, GH, K). Himachal Pradesh ?: Punjab, Kangra, Parbati Valley, 8–12 June 1933 (fl), *Koelz* 4826 (GH).

NEPAL. West: Sarda Khola, 1050 m, 30 March 1952 (fl & fr), *Polunin, Sykes & Williams* 701 (BM). Central: Gurkha Himalaya, Lower Chepa Khola, *c.* 900 m, 15 April 1983 (fl & fr), *Schilling* 2671 (BM). East: Dudh Kosi, Jubing, 2400 m, 12 June 1954 (fl), *Stainton* 4626 (BM).

SIKKIM. Kalimpong, 1300 m, 20 June 1960 (fl & fr), *Kania, Murata & Togashi* 2953 (BM, K, TI); Gangtok, 2400 m 25 June 1945 (fl & fr), *Bor & Kirat Ram* 20710 (K).

BHUTAN. Tangsa, Langte Chu, 2250 m, 1 June 1966 (fl), *Bowes Lyon* 3297 (BM); Timpu, 2310 m, 11 August 1914 (fl), *Cooper* 2641 (BM, E); 2 km N. of Shamgong, *c.* 1920 m, 4 June 1979 (fl & fr), *Grierson & Long* 1603 (BM, E). For hybrids with *H. gramineum*, see p. 95.

INDIA (S). Tamil Nadu: Nilgiris Distr., Wellington, August 1937 (fl), *Vine* 9(BM); Pulney Hills, Kodaikanal, 20 May 1897 (fl), *Bourne* 18 (K).

SRI LANKA. Central Prov., Kandy Distr., Moray Estate, 25 October 1975 (fl & fr), *Sohmer & Sumithraarachchi* 9805 (K); Patana, Hakgala, 9 January 1932 (fr), *Simpson* 9078 (BM).

THAILAND. Chiang Rai: Chiengkien, near Chiengrai, 390 m, 2 February 1912 (fl & fr), *Kerr* 2486 (BM, K). Chiang Mai: Ob Luang table-land, 12 June 1968 (fl & fr), *van Beusekom & Phengklai* 1188 (AAU, BKF, C, K, L). Chanthaburi: Pong Nam Ron, *c.* 200 m, 11 March 1956 (fl), *Smitinand* 3286 (BKF, C, K).

LAOS. Haut Laos, Phong-saly à Muong-sing, 15 May 1936 (fl & fr), *Poilane* 26137 (A).

VIETNAM. North: Ha-coi, Taai Wongo Mo Shan near Chuk-phai, 3 May–22 June 1939 (fl & fr), *Tsang* 29068 (A, BO, K, L, SING). South: Langbian Prov., Dalat, 1500 m, April–May 1918 (fl & fr), *Boden Kloss* s.n. (BM).

MALAYA. Kelantan: Kota Bahru, February 1917 (fl & fr), *Ridley* s.n. (K). Trengganu: Kurla Trengganu, Sungei Neruo, Kampong Merjor, 18 September 1955 (fl & fr), *Sinclair* SF 40887 (BM, BO, K, L, SING). Pinang: S. of Western Hill, *c.* 1500 m, 17 July 1928 (fl & fr), *Holttum* 19779 (SING). Singapore: Chua Chu Kang, 1908 (fl & fr), *Ridley* s.n. (SING).

SUMATERA. Aceh: Tahengor, 1180 m, 28 August 1934 (fl & fr), *v. Steenis* 5880 (BO). Utara: Seriboedolok, N. van het Tobameer, *c.* 1420 m, 21 May 1923 (fr), *Lörzing* 9807 (BO). Barat: Bungusti, 3 June 1953 (fr), *v. Borssum Waalkes* 1462 (L). Jambi: Gunong Talang, Laras Talang, *c.* 1500 m, 26 October 1918 (fl & fr), *Bünnemeijer* 5185 (L). Bengkulu: Moeara Aier Malinsam, 5 m, 30 May 1931 (fl & fr), *Eyl* 327 (BO). Selantan: Palembang, Pagar Alam, s.l., 26 December 1938 (fl & fr), *Rutter-Kooistra* 82 (GH, L).

JAVA. Barat: Tjibodas (Mt. Gede), 12 May 1950 (fl & fr), *v. Ooststroom* 14099 b (CANB, L). Tengah: Pekalongan, Soebah, 75 m, 28 October 1918 (fr), *Berger* 720 (BO). Timur: Madium, Tegalombo en Slahoeng, 200–600 m, 16 April 1912 (fr), *Backer* 3395 (BO).

FLORES. Ruteng, 1200 m, 12 June 1967 (fl & fr), *Schmutz* 1585 (L).

SULAWESI. Selantan: Subdiv. Ennekang, between Pasoei and Rante Lemo, 600–1330 m, 14 June 1937 (fl & fr), *Eyma* 395 (L). Tenguk: Gunong Kawatak, 6 July 1954 (fl & fr), *Alston* 16235 (BM).

BORNEO. Sabah: Mt. Kinabalu, Ulu Liwagu and Ulu Mesilau, 1500 m, 6 September 1961 (fl & fr), *Chew, Corner & Stainton* 2797 (K, L). Kalimantan Barat: Benkajang, *c.* 100 m, 10 July 1936 (fl & fr), *Dunselman* 37 (BO). Kalimantan Timur: W. Koetai, by L. Petah, 450 m, 13 September 1925 (fl), *Endert* 3240 (L).

PHILIPPINES. Luzon: Mountain Prov., Banaue, Bayninan, 1500 m, 26 November 1962, *Mendoza & Buwaya* 710 (K, L, PNH). Benguet Prov., Baguio, March 1907 (fl), *Elmer* 8982 (BO, K, L, US); Mt. Pulog, 1800–1900 m, 8 February 1969 (fr), *Jacobs* 7382 (K, L). Bohol: Bohol, August–October 1923 (fl & fr), *Ramos* PBS 42710 (SING). Mindanao: Lanao Prov., Saguiran Mt., 26 February–30 March 1941 (fr), *Ebalo* 1137 (PNH).

IRIAN JAYA. West: Manokwari, Vogelkop, Angi Gita Lake, 1800 m, 9–22 October 1948 (fl & fr), *Kostermans* 2121 (A, K, L). Central: Wissel Lakes, Enarotali, 1760 m, 12 May 1960 (fl & fr), *Vink & Schram* BW 8585 (CANB, L, LAE). Hollandia: Star Mts., Sibil valley, 1200–1300 m, 20 June 1959 (fl & fr), *de Wilde & Vervoort* 543 (L).

PAPUA-NEW GUINEA. Central: Vanape valley, Urunu, 1900 m, August–September 1933 (fl & fr), *Brass* 4001 (A, BM, BO, BRI, US). S. Highlands: Mindi valley, near Kiburu, 6 July 1961 (fl & fr), *Schodde* 1432 (CANB, L, LAE). Milne Bay: Mt. Maneao, 2250 m, 22 June 1956 (fr), *Crutwell* 758 (K, LAE). Sepik: Telefomin subdistr., Oksapmin, 1421 m, 23 October 1968 (fr), *Henty, Isgar & Galore* NFG 41750 (L). Madang: Saidor subdistr., Nako-Rawa Divide, Sewe, Lake Naho, *c.* 2700 m, 16 November 1964 (fl & fr), *Sayers* NGF 21455 (BM, L). Morobe: Mt. Salawaket, 20 January 1963 (fl), *Hartley* 11182 (CANB, LAE). W. Highlands: Wabag subdistr., Sugarloaf complex, near Wapu R., *c.* 2850 m, 19 July 1960 (fl & fr), *Hoogland & Schodde* 7146 (A, BM, L).

AUSTRALIA. Queensland: Mt. Ballandean, October 1944 (fl), *Clemens* s.n. (BRI). New South Wales: Cumberland Co., Bormanormann, Murray R., 9 April 1981 (fr), *Payten* s.n. (Z). A.C.T.: Paddy's River Dist., near Tidbinbilla Homestead along Hurdle Creek, *c.* 650 m, 28 December 1952 (fl), *Hoogland* 3102 (A, BM, L). Victoria: in the south and east, fide Willis (1972: 392). South Australia: Mt. Lofty, March 1902 (fl & fr), *Koch* 823 (K). Tasmania: Nietta Great Lake, January 1934 (fl & fr), *Lester-Garland* (K).

NEW ZEALAND. North Island: Rotorua, November 1909 (fl), *Tilden* 150 (BM, GH, K); Hunterville, 1905 (fl), *Burgess* s.n. (K). South Island: prope Otaranui, 1769 (fl), *Banks & Solander* s.n. (BM). Stewart Island: fide Allan (1961: 332).

H. japonicum is most closely related to 38. *H. gymnanthum*, differing from it in its broader bracts, oblong, usually subacute to obtuse sepals, and cylindric or subcylindric to globose capsule that is shorter than the sepals. In addition it often differs from that species in habit, in its stems rooting at the base or at nodes, in the obtuse to rounded leaf apex, and

in the inflorescence branching. From 39. *H. mutilum* (q.v.) it differs in habit, leaf, and floral characters.

The form of *H. japonicum* that is most similar to *H. gymnanthum* occurs in China, Taiwan, and the Philippines, which suggests that the ancestor of *H. japonicum* mostly likely reached east Asia by (ancient) long-distance dispersal from North America. See the discussion on p. 11.

There is now no doubt that *H. chinese* Osbeck is an earlier name for this species; but I am most reluctant to follow the *International Code of Nomenclature* because the use of this name would certainly result in much confusion and inconvenience. *H. chinese* Osbeck has never been used since it was published. Merrill (1916) pointed out its priority over *H. japonicum* Thunb. ex Murray, but thought that *H. chinense* L. was the same species. The Linnaean name, however, applies to a widely cultivated shrub in sect. 3. *Ascyreia* that Linnaeus described twice, as he also validated a Miller name for it, *H. monogynum* (Robson, 1985). *H. chinense* L. can be dropped in favour of *H. monogynum* L. with little inconvenience, and the latter name is gradually becoming used at present. However, to replace *H. japonicum* by *H. chinense* for such a widespread species and important ricefield weed would be to manufacture a nomen confusum. *H. japonicum* Thunb. ex Murray therefore has been proposed for conservation and, in anticipation of its being conserved, I am retaining it here.

H. japonicum is a very variable species, particularly in habit, inflorescence form, and bract shape. Despite the long synonymy, however, and the alleged difference between (a) erect, little-branched plants with small linear bracts (*H. japonicum* sensu stricto) and (b) decumbent to prostrate plants with foliar bracts (*H. laxum*, etc.), there is no complete correlation between the bract and habit characters, the variation being apparently continuous throughout the range of the species. It is possible, however, to recognize five main nodal variants, one of which has four subsidiary geographical variants (Robson, 1972, 1974); but the continuous variation prevents their being given formal taxonomic ranks.

Typical examples of these variants may be identified by the following key:

1. Bracts (all or at least upper) linear to lanceolate, not foliar; stems erect to decumbent ('*japonicum*') 2
   Bracts all foliar; stems decumbent (or rarely erect) to prostrate 4

2. Inflorescence at least partly dichasial; stems usually ± erect 3
   Inflorescence wholly monochasial or mixed with flowering branches; stems decumbent ..... Variant (3)

3. Inflorescence from terminal node only; stem without other branches ..... Variant (1)
   Inflorescence from more than one node; stem sometimes with other branches ..... Variant (2)

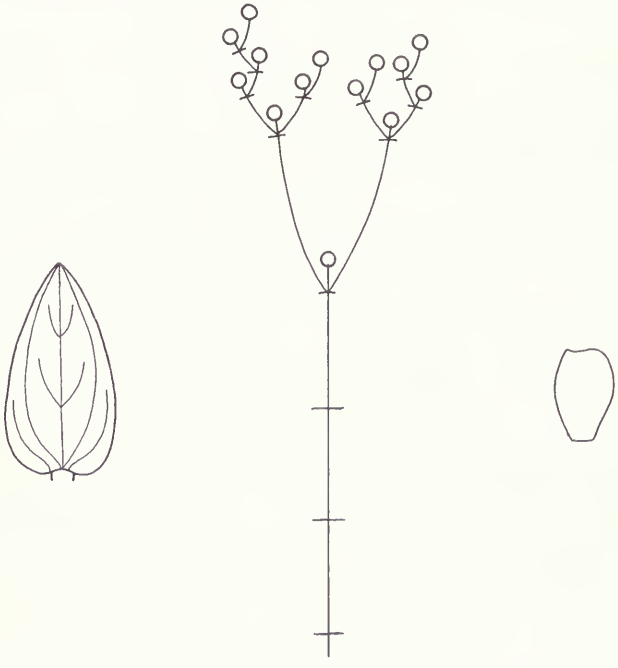
4. Stem-branching irregular or rarely absent, very rarely sympodial but the stems erect to decumbent; sepals narrow to broad (Variant 4) 5
   Stem-branching sympodial (i.e. flowers pseudo-axillary) or rarely absent; ± prostrate; sepals narrowly elliptic to narrowly oblong ('*humifusum*') ..... Variant (5)

5. Sepals narrowly oblong to narrowly elliptic 6
   Sepals (at least outer) broadly elliptic to obovate 7

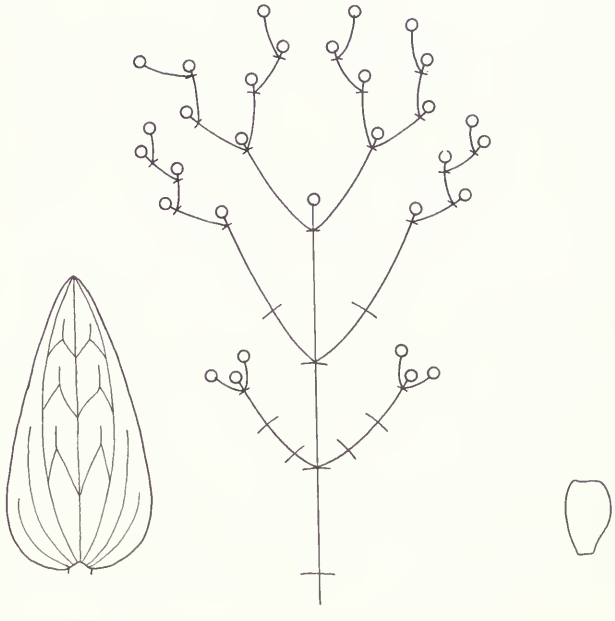
6. Stems erect ('*maximowiczii*') ..... Variant (4a)
   Stems decumbent to procumbent (or prostrate?), diffuse ('*laxum*') ..... Variant (4b)

7. Stems decumbent or, if prostrate, then leaves ovate to narrowly oblong-elliptic; leaves 3–8 mm long, ovate or oblong to elliptic or rarely oblanceolate ('*calyculatum*') ..... Variant (4c)
   Stems prostrate; leaves 1–4 mm long, obovate to orbicular ('*javanicum*') ..... Variant (4d)

Variant (1). '*japonicum*' pro parte: Stems erect, simple; leaves broadly ovate, apex subacute to obtuse, base cordate-amplexicaul; inflorescence terminal only, regularly dichasial at first; bracts all (or at least upper) linear to lanceolate;

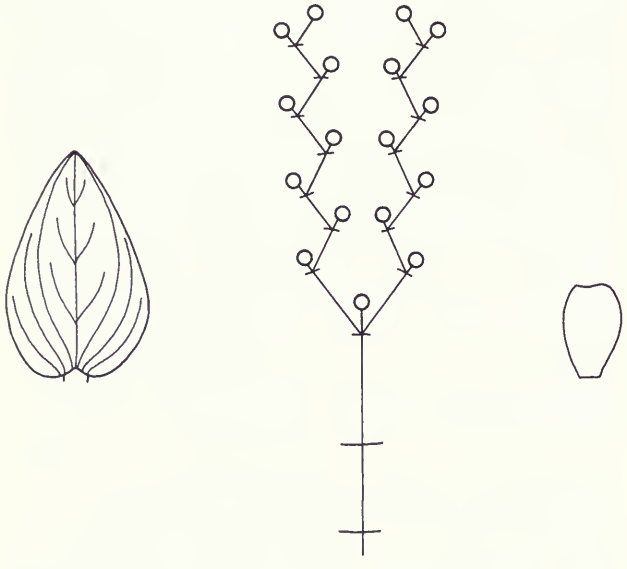


sepals oblong to narrowly elliptic or oblanceolate; petals as long as sepals; stamens 25–30; capsule cylindric or cylindric-ellipsoid, shorter than sepals. Korea, China, Taiwan, Philippines.



Variant (2), '*japonicum*' pro parte: Stems erect or more rarely decumbent, branched; leaves ovate to narrowly elliptic, apex subacute to obtuse, base cordate-amplexicaul to broadly cuneate; inflorescence terminal and lateral, regularly dichasial at first; bracts all (or at least upper) linear to lanceolate; sepals oblong to narrowly elliptic or oblanceolate; petals as long as sepals; stamens 25–30; capsule cylindric or cylindric-ellipsoid, shorter than sepals. Distribution as for Variant (1) with extensions to southern Japan, south Malaya, Sumatera, Java, Borneo, and Sulawesi, and outlying areas in India (Assam, Tamil Nadu) and Sri Lanka.

Variant (3), '*japonicum*' pro parte: Stems decumbent, rarely branched; leaves ovate to oblong, apex obtuse, base cordate-amplexicaul to rounded; inflorescence terminal, wholly monochasial or mixed monochasial/pseudo-dichotomous;



bracts all (or at least upper) linear to lanceolate; sepals oblong to elliptic; petals as long as sepals; stamens *c.* 20; capsule cylindric to cylindric-ellipsoid, shorter than sepals. South Thailand, Kampuchea, South Vietnam, Malaya, Sumatera, Java, Borneo, Philippines (i.e. the southern part of the range of Variant (2) with an extension to Thailand and Indo-China and excluding Sulawesi).

The following synonyms apply to Variants (1–3), i.e. *H. japonicum* sensu stricto, as well as those cited above (p. 123):

H. japonicum Thunb., *Fl. jap.*: 295 (1784), pro parte, excl. t. 31.

H. campestre Moon, *Cat. pl. Ceylon*: 56 (1824); Trimen, *Fl. Ceylon* **1**: 93 (1893), in synon., nom. nud.; non Cham. & Schlechtendal (1828).

Tridia frankenioides Korth. in *Tijdschr. Natuurl. Gesch. Physiol.* **3**: 17, t. 1 (1836). Type: Sumatra, Barat, Padang, n.d. (fl & fr), *Korthals* s.n. (L!-holotype).

Hypericum nervatum Hance in Walp., *Ann. bot. syst.* **2**: 188 (1851). Type: Hong Kong, *Hance* (unlocated).

H. sumatranum Miq., *Pl. jungh.*: 395 (1855). Type: Sumatra, Barat, Padang, 'in monticulo Apenberg', n.d. (fr), *Junghuhn* s.n. (L!-holotype).

Brathys japonica var. *accumbens* Blume, *Mus. bot.* **2**: 19 (1856). Type: Japan, without precise locality, – June – (fl & fr), *Siebold* (L!-holotype).

B. radicans Blume, *Mus. bot.* **2**: 20 (1856). Type: Sumatra, without precise locality, n.d. (fl & fr), *Korthals* s.n. (L!-holotype).

B. cespitosa Blume, *Mus. bot.* **2**: 20 (1856). Type: Sumatra, without precise locality, n.d. (fr), *Waitz* s.n. (L!-holotype).

B. cespitosa var. *pusilla* Blume, *Mus. bot.* **2**: 20 (1850). Type: Sumatra, without precise locality, n.d. (fr), *Waitz* s.n. (L!-holotype).

Hypericum japonicum forma *microphyllum* Miq. in *Ann. mus. bot. lugd.-bat.* **2**: 289 (1866) ['*microphylla*'], *Prolus. fl. jap.*: 147 (1866). Type as for *B. japonica* var. *accumbens*.

H. taquetii H. Léveillé & Vaniot in *Reprium Spec. nov. Regni veg.* **5**: 279 (1908) ['*taqueti*']. Type: Korea, in humidis Quelpaert [I.], August 1907 (fl & fr), *Faurie* 1793 (E-holotype; BM!-isotype).

H. japonicum var. *plurinervium* H. Léveillé in *Reprium Spec. nov. Regni veg.* **8**: 451 (1910). Type: Korea, Quelpaert [I.], in herbidis humidis Hannon, 20 August 1908 (fl & fr), *Taquet* 586 (E-holotype; BM!, K!-isotypes).

H. japonicum var. *accumbens* (Blume) Pampan. in *Nuovo G. bot. ital.* II, **17**: 670 (1910); Koidzumi in *Bot. Mag., Tokyo* **40**: 344 (1926).

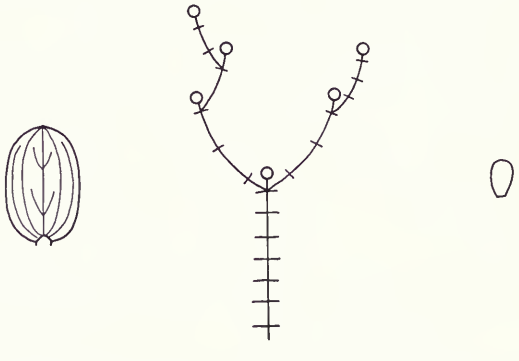
H. japonicum var. *majus* Fyson, *Fl. S. India Hill Stns* **1**: 49 (1932) ['*major*']. Type: India, Tamil Nadu, Nilgris, on western downs (not located).

Sarothra japonica forma *vulgaris* Y. Kimura in Nakai & Honda, *Nova fl. jap.* **10**: 240 (1951). Type: Japan, Honshu, Prov. Iga, Simagapara-mura, 15 August 1935 (fl & fr), *Kurokawa* 34 (TI!-holotype).

Sarothra japonica forma *microphylla* (Miq.) Y. Kimura in Nakai & Honda, *Nova fl. jap.* **10**; 240 (1951).

Icon: N. Robson in Li et al., *Fl. Taiwan* **2**: 634, t. 430 (1976).

Variant (4), '*laxum*': Stems decumbent (or rarely erect) to prostrate, usually branched; leaves ovate to narrowly oblong, apex rounded, base rounded to cuneate; inflorescence terminal and lateral, dichasial to monochasial or pseudo-



dichotomous or mixed; bracts foliar; sepals variable in shape; petals equalling or shorter than sepals; stamens (5) 10–20; capsule subcylindric to globose, equalling or exceeding sepals. Distribution of the species.

Four distinct forms of Variant (4) can be discerned:

Variant (4a), '*maximowiczii*': Stems erect; leaves ovate to elliptic; sepals narrowly oblong to narrowly elliptic. Japan, Korea, China, Taiwan.

H. japonicum sensu Thunb., *Fl. jap.*: 295 (1784), pro parte, quoad t. 31.

H. thunbergii Franchet & P. A. L. Savat., *Enum. pl. jap.* **2**: 300 (1878); H. Léveillé in *Bull. Soc. bot. Fr.* **53**: 501 (1906). Type: Japan, circa Yokoska [Yokosuka] frequens, 1866–1874 (fl & fr), *Savatier* 158 (P-lectotype, mihi; K!-

isolectotype). Also cited are *Savatier* 3411 (P), *Savatier* s.n. (P), and '*H. japonicum* Thunb., *Fl. jap.* tab. 31, excl. descript.'

H. yabei H. Léveillé & Vaniot in *Bull. Soc. bot. Fr.* **53**: 501 (1906); non *H. yabei* H. Léveillé & Vaniot in *Reprium Spec. nov. Regni veg.* **5**: 279 (1808). Type: Japan, Honshu, in turfosis Kattassan, October 1903 (fl & fr), *Faurie* 9 (E-holotype; BM!-isotype).

H. dominii H. Léveillé in *Bull. Soc. bot. Fr.* **54**: 593 (1908). Type: Korea, 'rizieres à Fusan' [Pusan], 4 October 1901, *Faurie* 162 (E-holotype).

H. japonicum var. *maximowiczii* R. Keller in *Bull. Herb. Boissier* II, **8**: 185 (1908); Hand.-Mazz., *Symb. sin.* **7**(2): 404 (1931). Type: Japan, Kyushu, Nagasaki, 1863 (fr), *Maximowicz* s.n. (W!-holotype; BM!, LE).

H. japonicum var. *thunbergii* (Franchet & P. A. L. Savat.) R. Keller in *Bull. Herb. Boissier* II, **8**: 185 (1908), in *Bot. Jb.* **44**: 49 (1909); Hand.-Mazz., *Symb. sin.* 7(2): 404 (1931).

H. pseudo-japonicum Nakai in *Bot. Mag., Tokyo* **27**: 130 (1913), nom. nud.

H. japonicum forma *yabei* (H. Léveillé & Vaniot) Makino, *Syokubutu Dzukan*: 553, t. 628 (1925).

H. japonicum var. *robustum* Miq. ex Koidz. in *Bot. Mag., Tokyo* **40**: 345 (1926). Type: Japan, without precise locality, n.d. (fl & fr), *Siebold* (L!-holotype).

H. laxum var. *hananoegoense* Masam. in *Mem. Fac. Sci. Taihoku imp. Univ.* (Bot.) **11**, No. 4: 305 (1934). Type: Japan, Ryukyu Islands, Yakusima, Hananoego, 30 August 1926, *Masamune* s.n. (TI-holotype).

Sarothra japonica forma *robusta* (Miq. ex Koidz.) Y. Kimura in Nakai & Honda, *Nova fl. jap.* **10**: 240, t. 79 (1951).

S. laxa forma *simplex* Y. Kimura in Nakai & Honda, *Nova fl. jap.* **10**: 244 (1951). Type: Japan, Honshu, Prov. Iga, Zyonan-mura, 19 August 1934 (fl & fr), *Kurokawa* s.n. (TI!-holotype).

S. laxa forma *erecta* Y. Kimura in Nakai & Honda, *Nova fl. jap.* **10**: 245 (1951). Type: Japan, Honshu, Prov. Iga, Naga-gun, Kobe-mura, 13 August 1935 (fl), *Kurakawa* 32 (TI!-holotype).

S. laxa forma *hananoegoense* (Masam.) Y. Kimura in Nakai & Honda, *Nova fl. jap.* **10**: 245 (1951).

Icon: Thunb., *Fl. jap.*: t. 31 (1784).

Variant (4b) '*laxum*': Stems decumbent to procumbent (or prostate?), diffuse;[13] leaves ovate to narrowly oblong; sepals narrowly oblong to narrowly elliptic. Distribution of the species except the Himalayan region, Australia, and New Zealand.

Brathys laxa Blume, *Mus. bot.* **2**: 19 (1856). Types: Japan, Kyushu, prope vicum Ho Ko Hara, n.d. (fl & fr), *Punt* s.n. (L!-lectotype, mihi); without precise locality, n.d. (fr), *Keithe* s.n. (L!-syntype).

B. debilis Blume, *Mus. bot.* **2**: 20 (1856). Type: Java; without precise locality, n.d. (fl & fr), *Blume* s.n. (L!-holotype).

B. oryzetum Blume, *Mus. bot.* **2**: 20 (1856). Type: Sulawezi, in oryzetis circa Tondauo, n.d. (fl & fr), *Forsten* 127 (L!-holotype).

Hypericum japonicum forma *tenuius* Miq. in *Ann. mus. Bot. lugd.-bat.* **2**: 259 (1866), *Prolus. fl. jap.*: 147 (1866), ['*tenuior*']. Type as for *Brathys laxa* Blume.

H. cavaleriei H. Léveillé in *Bull. Soc. bot. Fr.* **54**: 593 (1908). Type: China, Guizhou, Kouy-tcheou, 1896, *Cavalerie.* s.n. (E-holotype).

H. mutilum sensu Gibbs, *Fl. Arfak Mts.*: 149 (1917).

H. laxum (Blume) Koidz. in *Bot. Mag, Tokyo* **40**: 344 (1926); Y. Kimura in *Bot. Mag., Tokyo* **51**: 737 (1937), op. cit. **53**: 427 (1939); Kitagawa in *Rep. Inst. scient. Res. Manchukuo* **3**: App. 1: 317 (1939); Nakai in *Bull. nat. Sci. Mus. Tokyo* No. 31: 78 (1952); Ohwi, *Fl. Jap.*: 780 (1956), Engl., transl.: 630 (1965); Murata in *Acta phytotax. geobot. Kyoto* **25**: 110 (1973).

H. japonicum var. *cavaleriei* (H. Léveillé) Koidz., *Fl. symb. orient.-asiat.*: 92 (1930).

H. laxum var. *novo-guineense* Hatusima in *Bot. Mag., Tokyo* **56**: 571 (1942). Type: New Guinea, W. Irian, Arfak Mts, Angi, Lake Gita, *c.* 1900 m, 5 April 1940 (fl & fr), *Kanehira & Hatusima* 13563 (TI-lectotype, mihi, A!-syntype); ditto, *Kanehira & Hatusima* 13557a (TI-syntype).

Sarothra laxa (Blume) Y. Kimura in Nakai & Honda, *Nova fl. jap.* **10**: 241, f. 79 (1951); Satake et al., *Wild fls. of Japan* **2**: 119, Pl. 119–5 (1982)).

S. laxa forma *repens* Y. Kimura in Nakai & Honda, *Nova fl. jap.* **10**: 244 (1951). Type: Japan, Kyushu, Prov. Tikugo, Yame-gun, Simohirokawa-mura, Mure, 1 October 1932 (fl), *Nakasima* s.n. (TI!-holotype).

S. laxa forma *ramosa* Y. Kimura in Nakai & Honda, *Nova fl. jap.* **10**: 244 (1951). Type: Japan, Honshu, Prov. Iga, Zyonan-mura, 16 August 1935 (fl), *Kurokawa* 29 (TI!-holotype).

S. laxa forma *ramosissima* Y. Kimura in Nakai & Honda, *Nova fl. jap.* **10**: 245 (1951). Type: Japan, Honshu, Prov. Musasi, Syakusii, Sampozi-ike, 19 October 1919 (fl & fr), *Hisauchi* s.n. (TI!-holotype).

Icon: Y. Kimura in Nakai & Honda, *Nova fl. jap.* **10**: 242, f. 79 (1951).

Variant (4c), '*calyculatum*': Stems erect to decumbent or ± prostrate, sometimes diffuse; leaves ovate to oblong to elliptic or rarely oblanceolate; sepals (at least outer) broadly elliptic to obovate, often mucronate. Himalayan region (Himachal Pradesh to Yunnan), northern Thailand, Vietnam, south India (Tamil Nadu).

H. japonicum [var.] ß *ramosum* Choisy in DC., *Prodr.* **1**: 549 (1824); G. Don, *Gen. hist.* **1**: 607 (1831). Type: Nepal: without precise locality, 1821 (fl & fr), *Wallich* 4811 C (G-DC!-holotype; BM!, K!).

H. dichotomum Buch.-Ham. ex D. Don, *Prodr. fl. nepal.*: 219 (1825), in synon.

Brathys nepalensis Blume, *Mus. bot.* **2**: 19 (1856). Type: Nepal, Catmandu [Khatmandu], 13 May 1802 (fl & fr), *Buchanan* s.n. (L-lectotype, mihi; BM!-syntype).

B. japonica [var.] ß *mucronisepala* Miq., *Fl. Ned. Ind.* **1**(2): 513 (1859). Type as for *Brathys nepalensis*.

Hypericum calycatum Jacquem. ex Dyer in J. D. Hook., *Fl. Brit. India* **1**: 256 (1874), in synon.

H. japonicum var. *calyculatum* R. Keller in *Bull. Herb. Boissier* II, **8**: 186 (1908); Hand.-Mazz., *Symb. sin.* **7**(2): 404 (1931). Type: Sikkim, Teesta, 600–1500 m, 11–13 May 1848, *Hooker* s.n. (W!-holotype; A!, GH!, K!).

Sarothra laxa sensu Hara, *Fl. E. Himal.* **2**: 82 (1971), pro parte excl. typ.

Icon: Royle, *Ill. bot. Himal. Mts.* **2**: t. 24, f. 2 (1834).

Variant (4d), '*javanicum*': Stems prostrate; leaves minute,

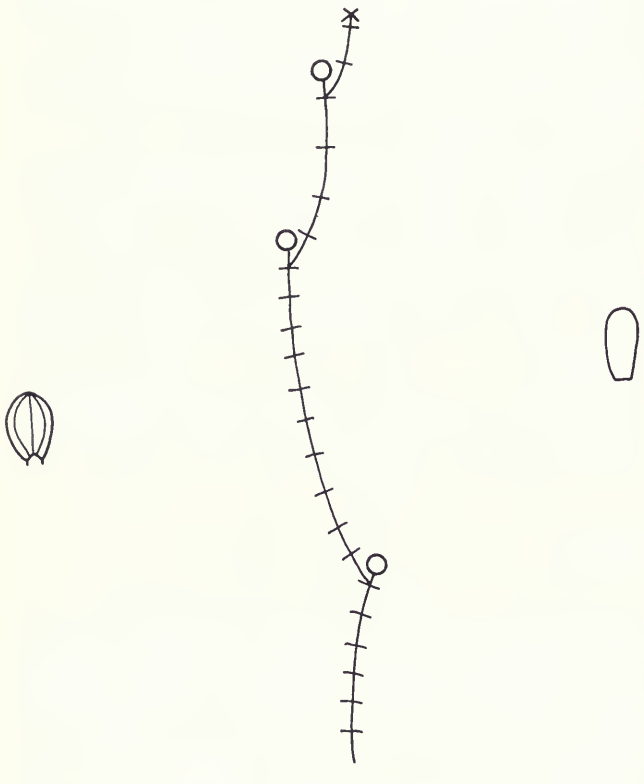
[13] '*H. laxum*' is propagated naturally in Japan by gemma-like perennating buds (Kimura, 1939).

obovate to orbicular; sepals (at least outer) broadly elliptic to obovate. West Java (Tjibodas region).

H. japonicum var. *humifusum* sensu Hochr. in *Candollea* **2**: 437 (1925).

H. japonicum var. *tenuius* sensu Backer & Bakh. v.d. Brink Jr., *Fl. Java* **1**: 382 (1963). ['*tenuior*'].

Variant (5), '*humifusum*': Stems ± prostrate, diffuse or rarely unbranched; leaves elliptic to narrowly oblong or oblanceolate, apex rounded, base cuneate; inflorescence branching sympodial (flowers 'axillary'); bracts foliar; sepals narrowly elliptic to narrowly oblong; petals longer than sepals; stamens 5–10; capsule subglobose, exceeding sepals. New Guinea, Tasmania, New Zealand.



Ascyrum humifusum Labill., *Nov. Holl. pl.* **2**: 33, t. 175 (1806). Type: Tasmania, 'Habitat in capite Van Diemen', *Labillardière* s.n. (P-holotype).

Hypericum pusillum Choisy, *Prodr. monogr. Hypéric.*: 50 (1821), in DC., *Prodr.* **1**: 549 (1824), nom. illegit. Type: as for *Ascyrum humifusum* Labill.

Brathys humifusa (Labill.) Spach in *Annls Sci. nat.* (Bot.) II, **5**: 367 (1836).

H. japonicum var. *humifusum* (Labill.) J. D. Hook., *Fl. nova-zel.* **1**: 37 (1853); R. Keller in *Bull. Herb. Boissier* II, **8**: 186 (1908).

H. japonicum var. *simplicius* R. Keller in *Bull. Herb. Boissier* II, **8**: 186 (1908), pro parte excl. spec. Prain. Types: Tasmania, Arthur's Lakes, 17 January 1845 (fl), *Gunn* s.n. (W!-lectotype, mihi; K!); Hampshire Hills, February 1837 (fl & fr), *Hooker* 656 (K!, W-syntypes); locality not found, *Hügel* (W-syntype).

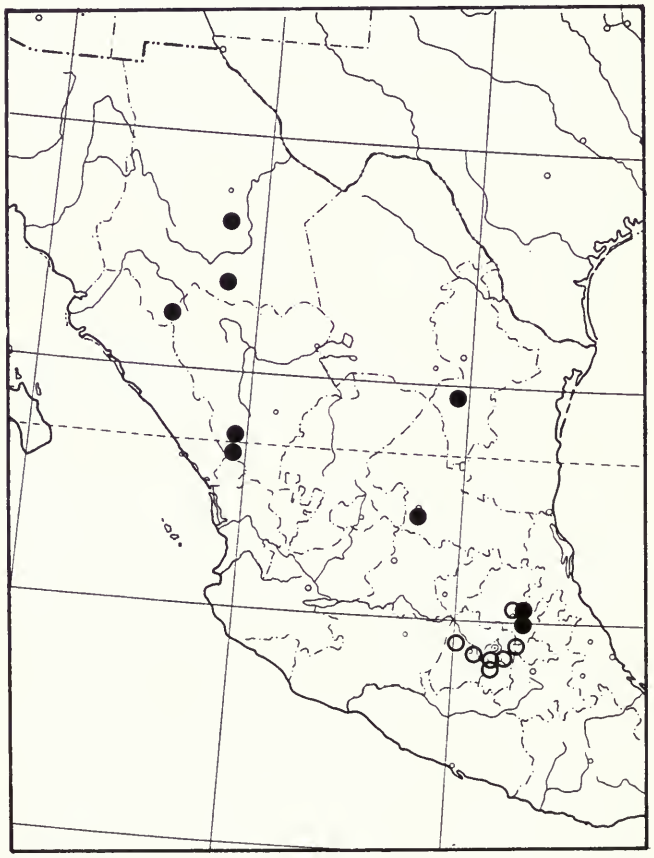
H. japonicum var. *humifusum* (Labill.) Hochr. in *Candollea* **2**: 437 (1925).

Icon: Labill., *Nov. Holl. pl.* **2**: t. 175 (1806).

43. **Hypericum pumillum** Sessé & Mociño, *Fl. mexic.* 2nd ed.: 177 (1894). Type: Mexico, México, in altioribus S. Nicolai montibus, 1787–1804 (fl), *Sessé & Mociño* 3598 (MA-holotype; BM!, F!).

Map 40.

Perennial herb 0·04–0·35 m tall, erect to diffuse and with branches ascending or decumbent to prostrate, rooting at the base. *Stems* green, sometimes glaucous, 4-angled, not ancipitous, the lines sometimes scabrid; internodes 3 mm (lower)–53 mm (upper) long, the upper longer to shorter than leaves. *Leaves* sessile, erect (upper) to sometimes spreading (lower), not tetrastichous, persistent; lamina 3–32 × 1·5–7 mm, narrowly lanceolate-oblong or narrowly oblong or oblong-elliptic or linear to oblanceolate-spathulate or obovate, plane or subrecurved, not cucullate, midrib prominent and (with main laterals) often scabrid beneath, concolorous or paler beneath, rather densely to scarcely glaucous, coriaceous to subcoriaceous; apex acute to obtuse or (smaller forms) rounded, margin scabrid-denticulate or entire, base cuneate, not sheathing, free; basal veins 1–3, with 1–3 pairs of ascending midrib branches, tertiary reticulation not visible; laminar glands dense (sometimes only distally), punctiform, not or scarcely prominent. *Inflorescence* 1–16-flowered, terminal, branching usually monochasial above first (dichasial) node, very rarely with 1 flowering branch from node below; primary pedicels 3–5(–6) mm long, not or scarcely incrassate; bracts lanceolate or (smaller forms) foliose, sometimes scabrid-denticulate. *Flowers* 10–16 mm in diam., stellate. *Sepals* 2·5–9·5 × 1–2·2 mm, subequal to unequal, imbricate or not, narrowly oblong or elliptic-oblong to



Map 40 Sect. 30: 43a. *H. pumillum* subsp. *diffusum* ●; 43b. *H. pumillum* subsp. *pumillum* ○.

lanceolate, acute, margin entire; veins 3–5, unbranched, usually becoming prominent. *Petals* orange-yellow, (always?) tinged or veined red outside, 5–9 × 3–5 mm, 1·3–1·6 × sepals, oblanceolate to obovate; apiculus acute; glands linear or interrupted, distally punctiform or absent. *Stamens* 12–*c.* 32, longest 2·5–5 mm long, *c.* 0·5 × petals. *Ovary* 1·5–2·5 × 1–1·5 mm, narrowly to broadly ovoid; styles 3(4), 1–2 mm long, 0·7–0·8 × ovary; stigmas capitate. *Capsule* 5·5–9 × 2·5–3 mm, narrowly ovoid-conic to ovoid or very rarely ellipsoid, exceeding sepals; valves without or with up to 3 glandular vesicles. *Seeds* 0·6 mm long; testa finely linear-scalariform.

Among grasses in open coniferous or *Quercus* forest or in damp meadows; 1800–3250 m.

Mexico, north-central (southern Chihuahua and southern Nuevo Leon to México).

H. pumillum is related to 32. *H. pauciflorum* but can be distinguished from it by the shorter styles, usually by the more condensed inflorescence, and sometimes (subsp. *pumillum*) by the dwarf habit. Rodríguez Jiménez differentiated this species (as *H. diffusum*) from *H. pauciflorum* by the presence of scabrid-denticulate ('retrorse-serrés') margins to the leaves and sepals. Although the leaves, bracts, and sepals are scabrid-denticulate in *H. diffusum* sensu stricto and the larger, more erect forms, in those of *H. pumillum* sensu stricto (*H. confusum* Rose) and the northernmost forms they are smooth or almost so. But some forms of *H. pauciflorum* (q.v.) are also scabrid-denticulate in the same parts. Rodríguez Jiménez classified these as *H. diffusum*, but in all respects other than the scabrid margins they are typical members of *H. pauciflorum*.

On the other hand, *H. confusum*, which Rodríguez Jiménez placed in *H. silenoides* (sensu latissimo), clearly forms the end of the southward trend in *H. diffusum*. The scabrid margins are usually lacking, there is a small geographical disjunction between the States of Hidalgo and México, and the higher altitude of the *confusum* form (3000–3250 m) is associated with a dwarfer habit. Nevertheless, there seems to be no good reason for recognizing it as more than subspecifically distinct. Inclusion of it in the same species as *H. diffusum* does, however, necessitate the use of the unfamiliar epithet *pumillum*.

43a. **Hypericum pumillum** subsp. **diffusum** (Rose) N. Robson, **stat. nov.**

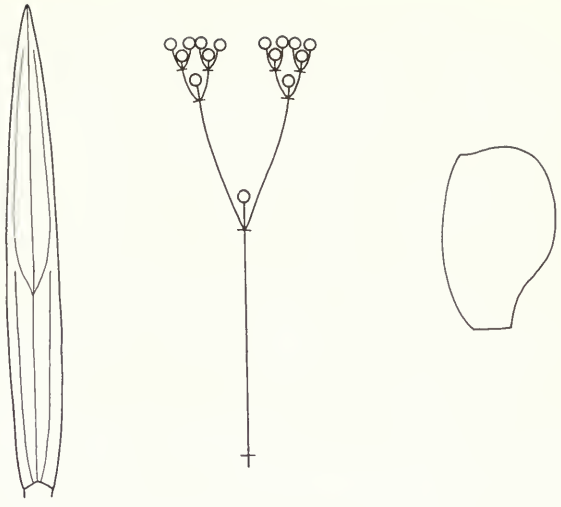
H. diffusum Rose in *Contr. U.S. natn. Herb.* **10**: 126 (1906); R. Keller in *Nat. Pflanzenfam.* 2nd ed. **21**: 183 (1925); Rodríguez Jiménez in *C. r. Soc. Biogéogr.* **432**: 90, map 5 (1972), in *Mem. Soc. Cienc. nat. La Salle* **33**: 117, ff. 3a, 14G (1973), pro parte, quoad typum. Type: Mexico, Hidalgo, near Buena Vista Station, 2490 m, 6 July 1904 (fl & fr), *Pringle* 8852 (US!-holotype; BM!, C!, F!, FI!, FR!, G!, GH!, GOET, K!, MEXU!, MO!, NY!, P!, SI, W!, Z!-isotypes).

H. pauciflorum sensu S. Watson in *Proc. Am. acad. Arts Sci.* **17**: 330 (1882), pro parte, quoad *Schaffner* 607 pro parte et *Parry & Palmer* 73 pro parte; Rodríguez Jiménez in *Mems Soc. Cienc. nat. La Salle* **33**: 102 (1973), pro parte.

H. silenoides sensu Rodríguez Jiménez in *Mems Soc. Cienc. nat. La Salle* **33**: 51 (1973), pro parte.

Icon: Rodríguez Jiménez in *Mems Soc. Cienc. nat. La Salle* **33**: 110, f. 14A (1973).

Stems 0·1–0·35 m long, erect to decumbent and then ± diffuse and rooting at the base. *Leaves* 7–32 × 2–7 mm, narrowly lanceolate or narrowly oblong to narrowly elliptic to oblong or elliptic (1:b = 2–7), margins and midrib beneath nearly always scabrid-denticulate, rarely smooth. *Inflorescence*(1)3–*c.* 16-flowered. *Sepals* 4–9·5 mm long, lanceolate to narrowly elliptic. *Stamens c.* 20–32. *Styles* 1·5–2 mm long. *Capsule* (5)6–9 × 2·5–3 mm, ovoid-conic or rarely narrowly ovoid.



Meadows and grassy slopes; 2100–2500 m.

Mexico (Durango, Chihuahua, Nuevo Leon, San Luis Potosí, Hidalgo).

MEXICO. Chihuahua: Mapula Mts., 2100 m, November 1886 (fr), *Pringle* 717 (BM, F, G, GH, K, MICH, MO, NY, P, US, W); Sierra Madres near Colonia Garcia, 2400 m, 3 August 1899 (fl), *Townsend & Barber* 214 (BM, F, GH, K, MEXU, MO, NY, P, US). Durango: Dos Cajetes, 48 km W. of Durango, 2550 m, April–November 1896 (fr), *Palmer* 804 (BM, C, F, GH, K, MICH, MO, NY, P, US, W); *c.* 55 km W. of C. Durango on highway to El Salto, W. of Arroyo Mimbres, 2300–2400 m, 29 August 1951 (fl & fr), *Maysilles* 7536 (MICH). Hidalgo: between Somoriel and Las Lajas, 5 August 1905 (fl), *Rose, Painter & Rose* 9246 (US). Nuevo Leon: Galeana, Hacienda Pablillo, 24 August 1936 (fr), *Taylor* 205 (F, GH, MEXU, MO, NY). San Luis Potosí: Alvarez, 28 September–3 October 1902 (fl & fr), *Palmer* 155 (BM, F, GH, MEXU, MO, US); Las Canoas, 21 July 1891 (fl & fr), *Pringle* 3704 (BM, F, K, MEXU, MO, NY, US, W).

The San Luis Potosí plants verge towards 44. *H. paucifolium*, whilst the Nuevo Leon population approaches 46. *H. parvulum* but has the ovoid capsules of *H. pumillum*.

43b. **Hypericum pumillum** subsp. **pumillum**

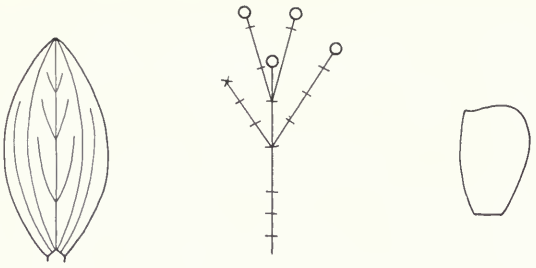
H. confusum Rose in *Contr. U.S. natn. Herb.* **10**: 124 (1906). Type: Mexico, Distr. Fed., Serrania de Ajusco, 3000 m, 23 August 1896 (fl), *Pringle* 6440 (US!-holotype; BM!, BR, F!, G!, GH!, GOET, K!, MEXU!, MO!, NY!, P, W!-isotypes).

H. brevistylum var. *mexicanum* R. Keller in *Bull. Herb. Boissier* II, **8**: 188 (1908). Type as for *H. confusum* Rose (W!-holotype).

H. brevistylum sensu R. Keller in Engl. & Prantl, *Nat. Pflanzenfam.* 2nd ed. **21**: 183 (1925), pro parte, quoad loc. 'Mexico', non Choisy (1821).

H. wawrae R. Keller in sched.

H. silenoides sensu Rodríguez Jiménez in *Mems Soc. Cienc.*



nat. La Salle **33**: 51 (1973), pro parte, quoad syn. *H. confusum* et *H. brevistylum* var. *mexicanum*.

H. silenoides var. *mexicanum* (R. Keller) Rodríguez Jiménez in *Phytologia* **56**(5): 327 (1984).

Stems 0·04–0·08 m long, decumbent to prostrate, rooting at the base. *Leaves* 3–15 × 1·5–5·5 mm, oblong-elliptic to obovate or oblanceolate-spathulate (1:b = 2–3·75), margins and midrib beneath smooth or almost so. *Inflorescence* 1–4-flowered. *Sepals* 3–6 mm long, lanceolate to elliptic or oblanceolate-spathulate. *Stamens c.* 12–15. *Styles* 1–1·5 mm long. *Capsule* 5–6 × 2–2·5 mm, narrowly ovoid (to ellipsoid ?).

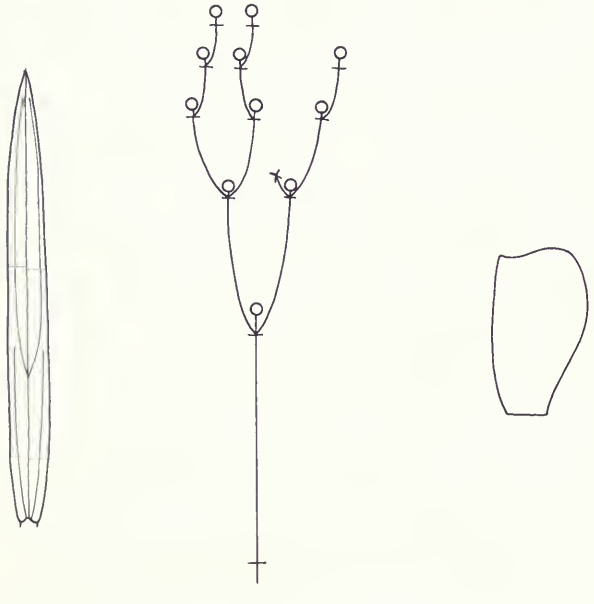
Grassy areas in coniferous forest; 3000–3250 m.

Mexico (México, Distr. Fed., Hidalgo).

MEXICO. Distr. Fed.: *c.* 2 km SSW. of La Cima R.R. station, 3060 m, 14 August 1960 (fr), *Iltis & Koeppen* 1065 (WIS). Hildalgo: Real del Monte to El Chicó, above Pueblo Nuevo and below Parque Nacional El Chicó, *c.* 3000 m, 25 July 1948 (fl), *Moore & Wood* 4098 (GH, MICH). México: Amecameca–Popocatepetl road near Km 72, *c.* 3000 m, 1 August 1958 (fl & fr), *Beaman* 2017 (GH, MEXU, US).

If the differences between these taxa in stamen number, style length, and capsule shape, as well as in leaf-margin, prove to be constant, then recognition at specific level would be arguable.

44. **Hypericum paucifolium** S. Watson in *Proc. Am. acad. Arts Sci.* **25**: 143 (1890). Type: Mexico, Nuevo Leon, Sierra Madre, near Monterey [Monterrey], 13 June 1888 (fl & fr), *Pringle* 2266 (GH!-holotype; US!-photograph[14]).



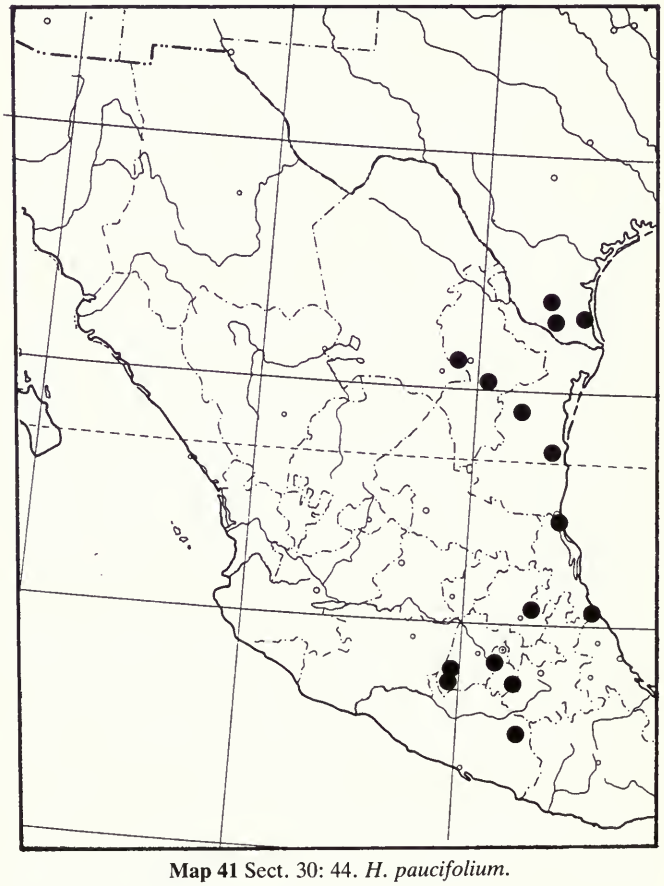
[14]See footnote on p. 101.

Fig. 21B, Map 41.

H. pauciflorum sensu Correll & M. Johnston, *Man. vasc. pl. Texas*: 1065 (1970); Rodríguez Jiménez in *Mems Soc. Cienc. nat. La Salle* **33**: 103 (1973), pro parte, quoad syn. *H. paucifolium* S. Watson.

H. melanostictum R. Keller in *Bull. Herb. Boissier* II, **8**: 188 (1908). Type: Mexico, without precise locality, 1832 (fr), *Allaman* s.n. (G!-holotype).

Perennial (? or annual) herb 0·1–0·7 m tall, erect or decumbent at the base but not rooting. *Stems* green or ± glaucous, 4-angled, the uppermost ancipitous, with lines smooth; internodes 2 (lower)–50 mm (upper) long, the upper exceeding leaves. *Leaves* sessile, spreading to erect, not tetrastichous, persistent; lamina 5–33 × 0·5–2 mm, decreasing in size up stem, linear-oblong or linear-lanceolate to linear, plane or recurved to revolute, not cucullate, midrib prominent beneath, smooth, subconcolorous, not or scarcely glaucous, subcoriaceous to chartaceous; apex acute, margin entire, base narrowly cuneate to parallel-sided, sometimes slightly decurrent, not sheathing, free; basal veins 1(3), sometimes with 1–3 pairs of ascending midrib branches, tertiary reticulation absent; laminar glands dense, punctiform, not prominent. *Inflorescence* 1–*c.* 50-flowered, terminal branching monochasial after first or second nodes, sometimes with paired flowering branches from 1–2 nodes below; pedicels 2·5–4 mm long; upper leaves and bracts lanceolate to linear-subulate, entire. *Flowers* 10–15 mm in diam., stellate or with petals recurved. *Sepals* 3–7 × 0·8–1·6 mm, subequal to unequal, not or scarcely imbricate, narrowly oblong to narrowly lanceolate, acute, margin entire; veins 5, unbranched, becoming prominent. *Petals* orange-yellow to golden



Map 41 Sect. 30: 44. *H. paucifolium*.

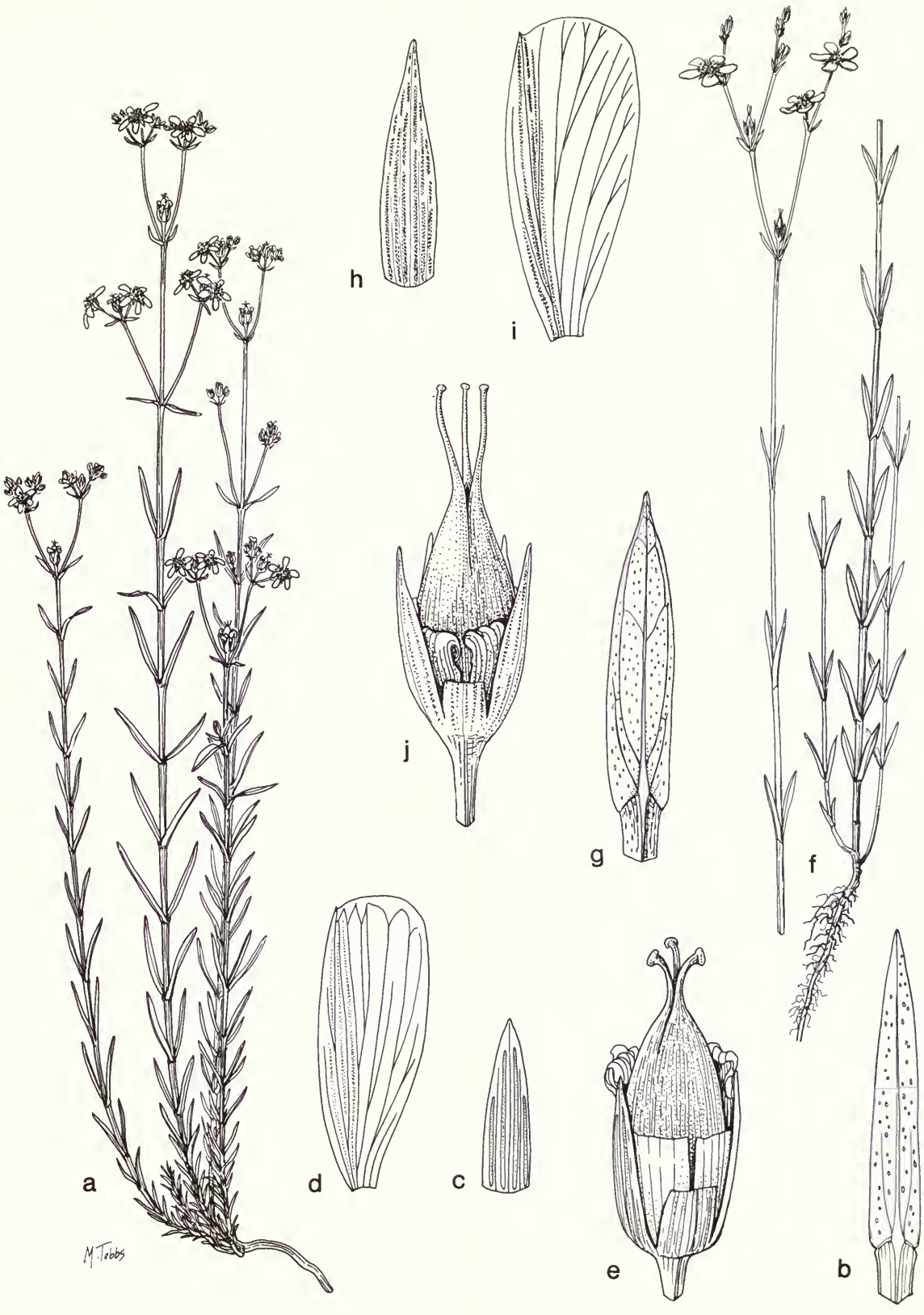


Fig. 21 A. *H. moranense*: (a) habit; (b) stem with leaf; (c) sepal; (d) petal; (e) capsule with old outer floral parts (partly cut away). B. *H. paucifolium*: (f) habit; (g) stem with leaf; (h) sepal; (i) petal; (j) capsule with old outer floral parts (partly cut away) (a, f × ½; b, g × 2; c–e, h–j × 5). A. *Pringle* s.n. B. *Hinton* 1361.

yellow, (always?) tinged red outside, 6–10 × 3–4 mm, 1·3–1·5 × sepals, oblanceolate to obovate; apiculus acute; glands linear, distally interrupted to striiform. *Stamens c.* 35–50, longest 3–5 mm long, *c.* 0·5 × petals. *Ovary* 1·5–2 × 0·7–1·2 mm, narrowly ovoid-conic; styles 3(4), 2·5–4(–5) mm long, 1·3–2 × ovary; stigmas broadly to narrowly capitate. *Capsule* 4–9 × 2–4 mm, ± narrowly ovoid-conic, usually acuminate, exceeding or equalling sepals; valves without or with 1–2 glandular vesicles. *Seeds* 0·5–0·7 mm long; testa finely linear-scalariform.

Dry grassy slopes, meadows, fields, and roadsides; sea level–2825 m.

Mexico (south-central [Guerrero, Morelos] to north-east [Tamaulipas, Nuevo Leon]), U.S.A. (Texas).

U.S.A. Texas: Brooks Co., King Ranch, 26 April 1949, *Lundell* 14974 (US*); Hidalgo Co., *c.* 8 km N. of San Manuel, Sta. Fe Ranch, 24 April 1949, *Lundell* 14944 (US*); Kenedy Co., along the highway, 8 May 1949, *Runyon* 4324 (US*); Willacy Co., Yturria station, 15 m, 20 April 1933, *Runyon* 1488 (US).

MEXICO. Guerrero: Chilpanicingo de los Bravos to Filo del Caballo via Chichihualco, 35 km W. of turn-off into Chichihualco, 2825 m, 14 January 1979 (fl & fr), *Croat* 45579 (MO). Mexico: Temescaltepec, Cerro Muneca, 2300 m, 15 August 1932 (fl), *Hinton* 1361 (BM, F, K, MEXU, MO, NY, US). Morelos: Cuautla, 1950 m, 1 August 19—, *Downing* 132 (MICH). Nuevo Leon: Sierra Madre, above Monterrey, 900 m, 29 August 1903 (fl), *Pringle* 8741 (BM, C, F, GH, K, MEXU, MO, NY, P, US, W); Sierra Madre, Monterrey, Diente Canyon, 18 July 1933 (fl), *C. H. & M. T. Mueller* 476 (F, GH). Tamaulipas: 13 km from Tampico on the Mante highway, 27 September 1959 (fr), *Johnston & Graham* 4078A (MEXU); Soto La Marina, April 1931 (fl), *Viereck* 1121 (US). Veracruz: 7 km S. of Tecolutla, Riachuelos, 5 m, 5 May 1968 (fl & fr), *Gutierrez R.* 293 (MICH).

H. paucifolium differs from *H. moranense* and the *H. pratense* group (Spp. 32–35) by the combination of longer styles, ovoid rather than ellipsoid or cylindric ovary, and leaves that decrease markedly in size up the stem. The accompanying gradual increase in internode size is less marked in this species than in 32. *H. pauciflorum*, which is more densely glaucous and has a narrower acuminate capsule, and usually broader, thicker leaves with scabrous-denticulate margin and midrib.

The Morelos population is nearest morphologically to 45. *moranense* and is superficially remarkably similar to the most primitive form of 48. *H. lalandii*, from Natal. Its capsules are almost ellipsoid, but the longer styles immediately distinguish it from *H. moranense*. There is a morphocline from Morelos via México, northern Veracruz, and Tamaulipas to south-eastern Texas, thence to Nuevo Leon (near Monterrey), where the population (in the type locality of *H. paucifolium*) is more reduced than the rest of the species, with fewer shorter narrower leaves and smaller flowers, and the ovary is shorter relative to the styles. It seems most appropriate, however, to treat it as an extreme form of the species rather than to separate it taxonomically.

45. **Hypericum moranense** Kunth in Humb., Bonpl. & Kunth, *Nov. gen. sp.* **5**: 193 (1822). Type: Mexico, Hidalgo, prope Morán, 2340 m, May 1803 (fl), *Humboldt & Bonpland* (P-HUM!-holotype; P!-isotype).

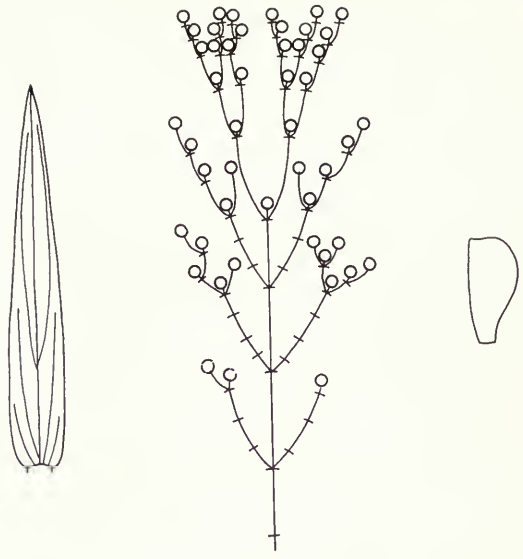


Fig. 21A, Map 42.

H. fastigiatum Kunth, tom. cit: 195 (1822); Choisy in DC., *Pror.* **1**: 548 (1824); Sprengel, *Syst. veg.* **3**: 346 (1826); D. Dietr, *Syn. pl.* **4**: 1236 (1847); R. Keller in *Bull. Herb. Boissier* II, **8**: 180 (1908), in Engl. & Prantl, *Nat. Pflanzenfam.* 2nd ed. **21**: 183 (1925); non Elliott (1821). Type: Mexico, Michoacán, Pazcuaro, 2340 m, September 1803 (fl & fr), *Humboldt & Bonpland* (P-HUM!-holotype).

H. canadense sensu Choisy in DC., *Prodr.* **1**: 550 (1824); R. Keller in *Bull. Herb. Boissier* II, **8**: 188 (1908), pro parte, quoad syn. *H. moranense*.

Brathys moranensis (Kunth) Spach in *Annls Sci. nat.* (Bot.) II, **5**: 367 (1836).

Map 42 Sect. 30: 45. *H. moranense*.

B. fastigiata (Kunth) Spach, loc. cit. (1836).
Hypericum thesiifolium sensu Triana & Planchon in *Annls Sci. nat.* (Bot.) IV, **18**; 290 (1862), pro parte, quoad syn. *H. moranense*.
H. schaffneri S. Watson in *Proc. Am. acad. Arts Sci.* **17**: 330 (1882); Urbina, *Cat. pl. mexic.*: 19 (1897); R. Keller in *Bull. Herb. Boissier* II, **8**: 180 (1908); Sanchez, *Fl. Valle de México*: 260, f. 197C (1969). Types: Mexico, San Luis Potosí, ex convalli San Luis Potosí, 1876 (fr), *Schaffner* 607 pro parte (GH!-lectotype; K!, MEXU!-paralectotypes); chiefly in the San Luis Potosí region, 1800–2400 m, November 1878 (fl), *Parry & Palmer* 73 pro parte (?-syntype). Watson decided that both *Schaffner* 607 and *Parry & Palmer* 73 are mixed gatherings and allocated parts of each collection to *H. pauciflorum* and his new species, *H. schaffneri*, and a third part of *Schaffner* 607 to *H. denticulatum* Kunth (= *H. galinum* S. F. Blake, sect. *Brathys*). He differentiated *H. schaffneri* from '*H. pauciflorum*' by its green (not glaucous) stem and leaves, numerous flowers, fewer stamens (5–10), very short styles, and oblong capsule, a description that clearly refers to *H. moranense*. I have therefore taken the part of *Schaffner* 607 that belongs to *H. moranense* as the lectotype of *H. schaffneri*, which thus becomes a synonym of *H. moranense*. (Rodríguez Jiménez (1973) made it a synonym of *H. pauciflorum*). I have, however, seen no specimens of *Parry & Palmer* 73 that belong to this species, only to Watson's '*H. pauciflorum*', which is actually 43a. *H. pumillum* subsp. *diffusum*.
H. sprague anum Bullock in *Kew Bull.* **1936**: 389 (1936). Type as for *H. fastigiatum* Kunth non Elliott.
H. hintonii Bullock in *Kew Bull.* **1936**: 390 (1936) ['*hintoni*']. Type: Mexico, México, distr. Temascaltepec, Puerto Salitre, 1300 m, 21 September 1932 (fl), *Hinton* 1796 (K!-holotype; BM!, GH!, NY!-isotypes, P!-photograph).
H. silenoides sensu Rodríguez Jiménez in *C. r. Soc. Biogéogr.* **432**: 91, map 2 (1972), in *Mems Soc. Cienc. nat. La Salle* **33**: 51 (1973), pro parte, quoad pl. Mex. pro parte.

Icon: Rodríguez Jiménez, tom. cit: 50, f. 11B (1973).

Perennial to annual herb 0·07–0·8–5 m tall, erect, not rooting, branching from the base (± caespitose) and occasionally in upper half, branches strict. *Stems* green to reddish, 4-angled, the uppermost internode ancipitous, with lines smooth or rarely subscabrid; internodes 3 mm (lower)–50 mm (upper) long, the upper equalling or exceeding leaves. *Leaves* sessile, erect or ± spreading, not tetrastichous, persistent; lamina 7–32 × 1–3 mm, linear-lanceolate to linear or (lower) linear-oblong, plane or recurved, not cucullate, midrib prominent and smooth beneath, paler beneath, not glaucous, chartaceous; apex acute or (lowermost) obtuse, margin entire or rarely scabrid, base narrowly cuneate to parallel-sided, not sheathing, free; basal or near-basal veins 1(3) with or without 1–3 pairs of ascending midrib branches, tertiary reticulation not visible; laminar glands dense, punctiform, not prominent. *Inflorescence* (1) 3–*c.* 40-flowered, terminal, branching usually monochasial above 1st to 3rd nodes or very rarely wholly monochasial, usually with pairs of flowering branches from up to 5 nodes below; primary pedicels 2–9 mm long; upper leaves and bracts narrowly lanceolate to linear-subulate, entire. *Flowers* 6–10 mm (?–12) mm in diam., stellate. *Sepals* 3–6 × 0·5–1·3 mm, subequal, not imbricate, narrowly lanceolate to narrowly oblong or linear, acute, margin entire; veins 3–5, unbranched, not becoming prominent. *Petals* golden yellow to apricot or orange, often tinged or veined red outside, (4–)5–7(–8) × 1·5–3 mm, *c.* 1·4 × sepals, oblanceolate; apiculus acute; glands linear, distally interrupted to striiform. *Stamens* *c.* 10–20, longest 3–5 mm long, *c.* 0·5–0·7 × petals. *Ovary* 1·3–2 × 0·7–1·5 mm, ± narrowly ellipsoid; styles 3(4), 0·7–1·7 mm long, 0·5–0·9 × ovary; stigmas broadly to narrowly capitate. *Capsule* 5–8 × 2–3 mm, narrowly cylindric to cylindric-ellipsoid, subacute to rounded, exceeding sepals; valves often with 1–2 glandular vesicles. *Seeds* 0·5 mm long; testa finely linear-scalariform.

Open, usually damp or wet areas in *Pinus-Quercus* or mixed forest, forest margins, meadows, pastures, bogs, fields, and roadsides; 1300–3270 (?–3500) m.

Mexico (San Luis Potosí, southern Sonora, and Chihuahua and from Nayarit and Jalisco southward to Puebla).

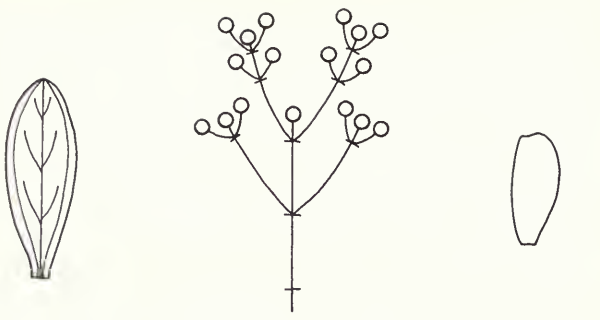
MEXICO. Aguascalientes: Sierra de Laurel, *c.* 16 km SE. of Calvillo, *c.* 2500 m, 4 November 1959 (fr), *McVaugh & Koelz* 195 (MICH). Chihuahua: Rio Mayo, San José de Pinal, 7 September 1935 (fl & fr), *Gentry* 2603 (F, K, MEXU). Distrito Federal: ascent to Cerro Ajusco, 15 September 1978 (fl), *D'Arcy* 11912 (BM, MO n.v.). Hildalgo: Sierra de Pachuca, 2700 m, 8 September 1899 (fr), *Pringle* 7960 (F, GH, K, MICH, MO, NY, US). Jalisco: near Guadalajara, 14 September 1891 (fl & fr), *Pringle* 385 (BM, F, GH, K, MEXU, MICH, MO, NY, P, US, W). México: Temascaltepec, Nanchititla, 30 August 1934 (fl), *Hinton* 6518 (BM, F, GH, K, MICH, MO, NY, US). Michoacán: vicinity of Morelia, Campanario, 2200 m, 12 September 1912 (fl & fr), *Arsène* 8304 (F, GH, MO, P, US). Morelos: above Cuernavaca, 2700 m, 26 September 1896 (fl), *Pringle* 6543 (BM, C, F, K, MEXU, MICH, MO, NY, P, US, W). Nayarit: lake NE. of Santa Maria del Oro, *c.* 1000 m, 18–20 August 1959 (fl & fr), *Feddema* 716 (MICH, P). Puebla: San Manuel de la Sierra, 2790 m, 9 August 1938 (fl), *Ballo* 5300 (BM, K, US). Querétaro: municipio Colon, Cerro Zamorané, 3200–3270 m, 13 November 1971 (fl), *McVaugh* 443 (F, MICH). San Luis Potosí: El Aquijon, 28 km SW. of Ríoverde, 1850 m, 8 June 1956 (fl & fr), *Rzedowski* 9687 (P). Sonora: Sierra Charuco, Río Mayo, 10 September 1935 (fl), *Gentry* 1725 (F, GH, K, MEXU, NY, US). Tlaxcala: San Pablo Ixyoc, 21 June 1981 (fr), *Hahn* 557 (MO).

Rodríguez Jiménez (1972, 1973) included *H. moranense* in a very broad concept of *H. silenoides* Juss., which also contained *H. pumillum* p.p. and *H. silenoides* (sect. *Trigynobrathys*) as well as *H. eastwoodianum* (sect. *Brathys*). In fact, *H. moranense* is distinguishable from *H. pauciflorum, H. pumillum*, and *H. paucifolium* by the short styles and ellipsoid to cylindric capsule, as well as usually by the more richly branched inflorescence. It is nearest to *H. paucifolium*, which likewise rarely has scabrid leaf margins and midribs. *H. moranense* is therefore confined to north-central Mexico.

46. **Hypericum parvulum** Greene in *Pittonia* **1**: 154 (1888). Type: Mexico, Durango, Sierra Madre above Durango, *c.* 2430 m, 1881 (fl & fr), *Forrer* s.n. (NY!-holotype).

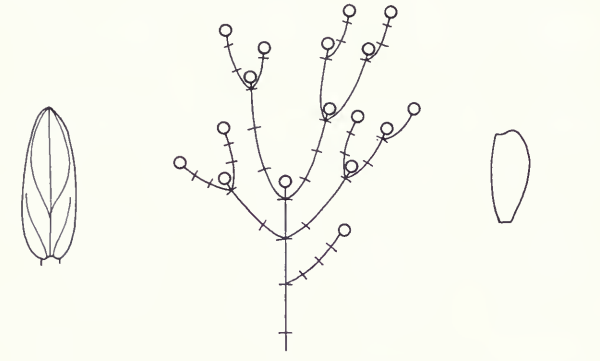
Maps 43, 44.

H. degeneri Fosb. in *Occ. Pap. Bernice P. Bishop Mus.* **24**: 21 (1969). Type: Hawaiian Is., Hawaii, Laumia, 1800–1950 m, *Neal & Hartt* s.n. (BISH-holotype).
H. japonicum sensu N. Robson in Steenis, *Fl. Males.* I, **8**: 27 (1974), pro parte, quoad syn. *H. degeneri*.
H. silenoides sensu Rodríguez Jiménez in *Mems Soc. Cienc.*



nat. La Salle **33**: 51 (1973), pro parte, quoad spec. *Moore* 2363.

H. mutilum sensu Rodríguez Jiménez in *Mems Soc. Cienc. nat. La Salle* **33**: 80 (1973), pro parte, quoad, syn. *H. degeneri*.



Perennial or annual herb 0·06–0·12 m tall (or to 0·4 m long), with stems erect to decumbent or more rarely prostrate and diffuse, branching and rooting at or near the base. *Stems* green, 4-lined, upper internodes ancipitous, with lines smooth; internodes 1–17 mm long, usually exceeding leaves. *Leaves* sessile, erect to ascending, not tetrastichous, persistent; lamina 5–9 × 1–3·5 mm, narrowly oblong to elliptic-oblong or lanceolate or (lower) oblanceolate, plane, not cucullate, midrib not or scarcely prominent beneath, smooth, concolorous, not glaucous, chartaceous; apex rounded, base narrowly to broadly cuneate, not sheathing, free; basal or near-basal veins 1(3–5), not or obscurely branched, tertiary reticulum absent; laminar glands rather dense, not prominent. *Inflorescence* 1–8-flowered, terminal, branching dichasial/monochasial or sometimes mixed with 2(3)-noded branches and pseudo-dichotomous to sympodial, sometimes with branch(es) from node below, the whole subcorymbiform; primary pedicels 3–7(–14) mm long; uppermost leaves and bracts foliose, reduced, entire. *Flowers* 6–7 mm in diam., stellate. *Sepals* 2·5–5 × 0·5–1·5 mm, unequal, not or scarcely imbricate, narrowly oblong or narrowly elliptic-oblong to oblanceolate-spathulate, subacute to rounded, margin entire; veins 3–5, unbranched, not prominent. *Petals* pale yellow to orange-yellow, tinged red in bud, 3–5·5 × 1·5–2 mm, slightly exceeding to 1·6 × sepals, oblanceolate; apiculus obsolete; glands absent. *Stamens* 5–15, 3-fascicled, longest 1·5–3·5 mm long, *c.* 0·5 × petals. *Ovary c.* 1 × 0·5 mm, narrowly ellipsoid; styles 3, (0·8–)1·5–2 mm long, (0·8)1·5–2 × ovary; stigmas narrowly capitate. *Capsule* (2·5–)3·5–4(–5) × 2–2·5(–3) mm, broadly ellipsoid, shorter than or rarely equalling or slightly exceeding sepals; valves glandular. *Seeds c.* 0·5 mm long; testa linear-scalariform.

Bogs and wet meadows; 2000–2700 m. (Mexico); disturbed ground 840–1680 m (Hawaii).

Mexico (Baja California Sur, Nayarit, Durango, Aguascalientes, Hidalgo); Hawaiian Islands (Hawaii).

MEXICO. Baja California Sur: Sierra de la Victoria, La Laguna meadow, 20 August 1955 (fl & fr), *Chambers* 915 (DS, MEXU). Nayarit: Sierra Madre, near Sta. Teresa, Terr. de Tepic, August 1897 (fl & fr), *Rose* 2098 (GH, NY, US); *c.* 16 km NW. of Mesa de Nayar, La Ciénaga, *c.* 2550 m, 30 July 1970 (fr), *Norris & Taranto* 14567 (MICH). Durango: Sierra Madre Occidental, *c.* 16 km W. of El Salto on Durango–Mazatlán highway, 2650 m, 2 October 1962 (fl & fr), *McVaugh* 21745 (MICH, NY). Aguascalientes: mun. San José de Gracia, 12 km SW. of La Congoja, 2700 m, 17 October 1973 (fl & fr), *McVaugh* 819 (G, MICH). Hidalgo: *c.* 5 km from Zacualtipán to Tianguistengo, 2100 m, 20 March 1947 (fl), *Moore* 2363 (GH).

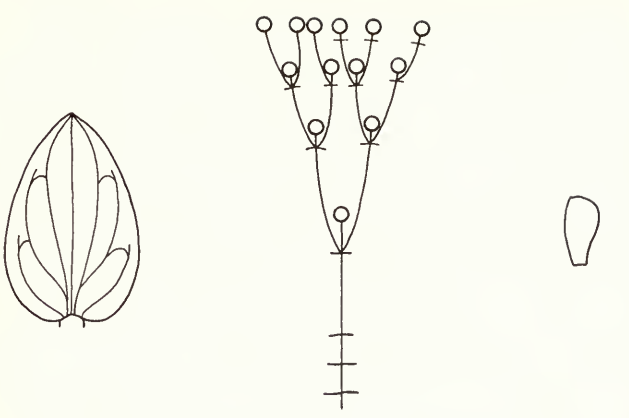
HAWAIIAN ISLANDS. Hawaii: Napau Trail, 840 m, 26 August 1942 (fr), *Fagerlind & Mitchell* 14 (BISH, K); Kilauea Crater, 1200 m, May 1932 (veg), *Meebold* s.n. (BISH); Kau District, Kilauea Forest Reserve, 1680 m, 8 July 1974 (fl), *Herat, Herat & Higashino* 969 (BISH).

H. parvulum (particularly the Baja California form) is most closely related to the Nuevo Leon population of *H. pumillum* subsp. *diffusum*, differing from it essentially in capsule shape and usually in the smaller size of parts and in leaf, sepal, and capsule shape. It is very similar to 47. *H. anagalloides* (q.v.), mainly from further north (northern Baja California to British Colombia), but also present in Baja California Sur.

The Hidalgo collection (*Moore* 2363) differs from the others in its diffuse prostrate habit, constantly narrowly oblong leaves, and smaller flowers. Further collections may show that it is taxonomically distinct.

The Hawaiian population, which was described as *H. degeneri*, is similar to *H. parvulum*, differing from the typical mainland form of that species in its usually more spreading habit, its constantly pseudo-dichotomous inflorescence, pale yellow petals, and fewer stamens (5–10 instead of 12–25), and styles that are shorter (*c.* 0·8 mm) than those of all but the Hidalgo specimen. These differences are not great, and the Hawaiian form is intermediate in some respects between those of Baja California and Zacatecas. It seems best, therefore, to include *H. degeneri* in *H. parvulum*. Fosberg thought that it was introduced into Hawaii about 1930. It certainly appeared there about that time in an area that had been previously well studied.

47. **Hypericum anagalloides** Cham. & Schlechtendal in *Linnaea* **3**: 127 (1828); Torrey & Gray, *Fl. N. Amer.* **1**: 167 (1838); Walp., *Repert. bot. syst.* **1**: 389 (1842); D. Dietr., *Syn. pl.* **4**: 1235 (1847); Coulter in *Bot. Gaz.* **11**: 109 (1886); Greene, *Fl. francisc.*: 113 (1891); R. Keller in *Bull. Herb. Boissier* II, **8**: 179, 186 (1908), in Engl. & Prantl, *Nat. Pflanzenfam.* 2nd ed. **21**: 181 (1925); Peck, *Man. Higher Pls Oregon*: 481 (1941); Abrams, *Ill. Fl. Pacific States* **3**: 116, f. 3236 (1951); Munz, *A Californian Flora*: 192 (1959); Rodríguez Jiménez in *C. r. Soc. Biogéogr.* **432**: 90, map 4 (1972), in *Mems Soc. Cienc. nat. La Salle* **33**: 89, ff. 2f, 3b (1973); Taylor & Macbryde, *Vasc. Pl. Br. Columbia*: 203 (1977); Scroggan, *Fl. Canada* **3**: 1095 (1978); J. M. Gillett & N. Robson in *Publs Bot. natn. Mus. nat. Sci. Can.* No. 11: 13, t. 5, map 4 (1981). Type: U.S.A., California, 'Ad portum St Francisci Californiae obviam nobis venit',



Chamisso s.n. (LE-holotype, P!-photograph).

Map 43.

H. anagalloides var. *nevadense* Greene, *Fl. francisc.*: 113 (1891). Type: U.S.A., California, near Calistoga, 19 June 1874 (fl), *Greene* 231 (NY-holotype; MO, P!-isotypes).

H. anagalloides var. *undulatum* R. Keller in *Bull. Herb. Boissier* II, **8**: 186 (1908). Type: U.S.A., California, no precise locality, 1868–1869 (fl), *Kellogg & Hartford* 104 (G!-holotype; P!, US-isotypes).

H. anagalloides var. *cymosum* R. Keller in *Bull. Herb. Boissier* II, **8**: 187 (1908). Type: U.S.A., California, Santa Cruz, 4 June 1881 (fr), *M. Jones* s.n. (BR-holotype; BM!, P!).

H. anagalloides var. *ramigerum* R. Keller in *Bull. Herb. Boissier* II, **8**: 187 (1908). Types: U.S.A., California, San Bernardino Mts, August 1884 (fl), *S. & W. Parish* 623 (BR-lectotype, Rodríguez Jiménez, 1973; US!-isolectotype); Oregon, 1871 (fl & fr), *Hall* 47 (W!-syntype; BM!, F, GOET, MO, P!).

H. anagalloides var. *pumilum* R. Keller in *Bull. Herb. Boissier* II, **8**: 187 (1908). Types: U.S.A., Oregon, Cascade Mts, 49°N lat., near Lake Chilakuerzerk, 1859 (fl), *Lyall* 34b (W!-lectotype, Rodríguez Jiménez, 1973; K!, P!); California, San Bernardino Mts, Little Bear Valley, 1200 m August 1892 (fl & fr), *Parish* 2340 (BR?, P-syntypes); Nevada, Ormsby Co., Clear Creek Cañon, 2000–2615 m, 9 June 1902 (fl), *Baker* 1030 (G!, W!-syntypes). Rodríguez Jiménez cites *S. & W. Parish* 623 as lectotype of var. *pumilum*, but also designates *Lyall* 34b as lectotype of this variety. Keller cites 'Parish' under vars. *ramigerum* and *pumilum*. The Lyall designation is unambiguous, as Keller cites this collector under var. *pumilum* only, and can stand. The *Parish* 623 designation can therefore be treated as a *lapsus* where var. *ramigerum* was intended.

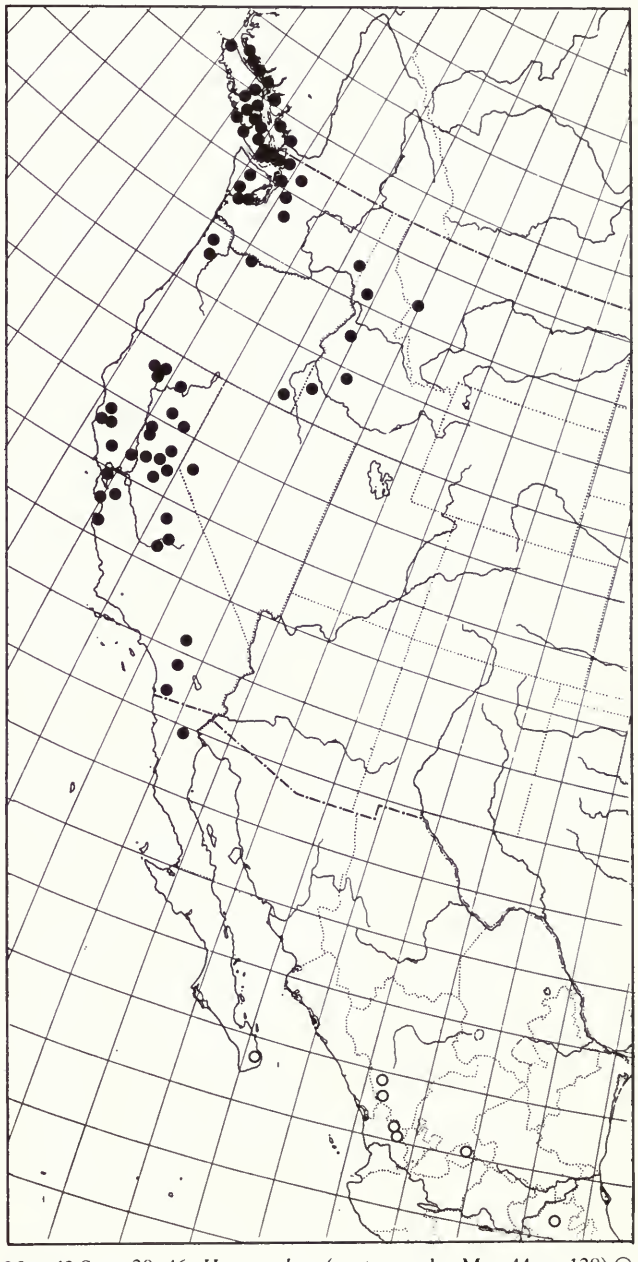
H. anagalloides var. *calicifolium* R. Keller in *Bull. Herb. Boissier* II, **8**: 187 (1908). Type: U.S.A., California (not found).

H. bryophytum Elmer in *Bot. Gaz.* **36**: 60 (1903). Type: U.S.A., Washington, Clallam Co., Olympic Mts., July 1900 (fl), *Elmer* 2833 (DS-holotype; MO, P!-isotypes).

H. tapetoides Nelson in *Bot. Gaz.* **52**: 266 (1911). Type: U.S.A., Idaho, Owyhee Mts., Silver City, 22 July 1910 (fl), *Macbride* 453 (RM-holotype; G!).

Icones: H. Mason, *A Fl. Marshes California*: 574, f. 263 (1957); J. M. Gillett & N. Robson in *Publs Bot. natn. Mus. nat. Sci. Can.*, No. 11: 14, t. 5 (1981).

Perennial or annual herb 0·03–0·15 m tall (or stems to 0·23 m long), with stems decumbent to ascending from diffusely branching and rooting base, forming loose mat, usually otherwise unbranched below inflorescence. *Stems* green to reddish, 4-angled, upper nodes ancipitous, with lines smooth; internodes 1–2 (lower) to 40 mm (upper) long, the upper usually exceeding leaves. *Leaves* sessile to subamplexicaul (upper), ± spreading, not tetrastichous, persistent; lamina 3–13 × 1·5–8·5 mm, ovate or orbicular to elliptic or oblong or (lower) or oblanceolate, plane, not cucullate, midrib slightly or not prominent beneath, smooth, concolorous, not glaucous, chartaceous to membranous; apex rounded, margin entire, base narrowly cuneate to rounded or (uppermost) rarely subcordate, not sheathing, free; basal or neat basal veins 3–5(7), tertiary reticulum rather dense or obscure; laminar glands rather sparse, peripheral, small, not promin-



Map 43 Sect. 30: 46. *H. parvulum* (part, see also Map 44, p. 138) ○; 47. *H. anagalloides* ●.

ent. *Inflorescence*1–*c.* 14-flowered, terminal, branching dichasial or dichasial/monochasial or mixed (some branches foliate) or shortly pseudo-dichotomous, rarely with pairs of flowering branches from node below, the whole loosely corymbiform; primary pedicels (1·4)4–7(–14) mm long; uppermost leaves and bracts foliose, at least bracts reduced, entire. *Flowers* 3–5(–8) mm in diam., stellate. *Sepals* (4)5, 2–4 × 0·9–2 mm, unequal, imbricate, narrowly elliptic-oblong to oblanceolate-spathulate or rarely obovate, subacute or apiculate to rounded, margin entire; veins (1)3–5, branched in larger sepals, not prominent. *Petals* (4)5, golden-yellow to salmon-orange, (1·7–)3·5–5 × 1·5–2·3 mm, slightly exceeding to slightly shorter than sepals, oblanceolate; apiculus obsolete; glands absent. *Stamens* (5–)12–25, sometimes obscurely 3-fascicled, longest 2–3·5 mm long, *c.* 0·7 × petals. *Ovary* 1–2 × 0·7–1·5 mm, ellipsoid to subglobose; styles 3, 0·5–1·5(–2) mm long, 0·5–1·5 × ovary; stigmas narrowly to scarcely capitate. *Capsule* 2·5–3·5(–5) × 1·7–2·5 mm, ellipsoid to cylindric or subglobose, shorter than or rarely equalling sepals; valves without circular glands. *Seeds* 0·5–0·6 mm long; testa linear-scalariform. 2n = 16 (Gillett & Robson, 1981).

Bogs, ditches, lake and stream margins, meadows, and other damp habitats; 50–2615 m.

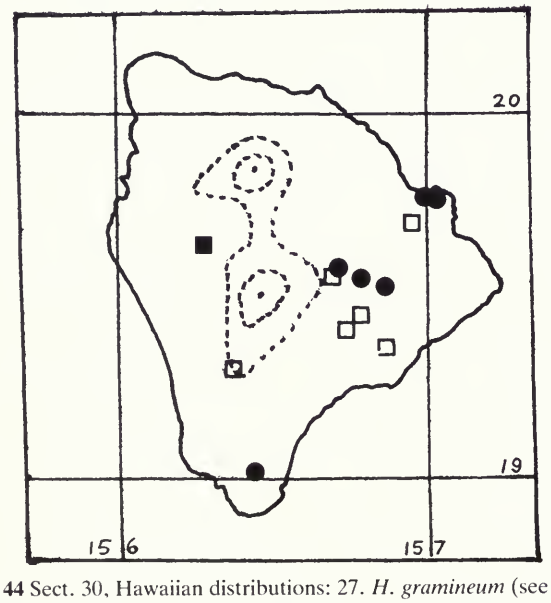
Canada (southern Br. Colombia – Vancouver I. and adjacent mainland), U.S.A. (Washington, Idaho, and Montana to Arizona and southern California), Mexico (northern and southern Baja California).

CANADA. British Colombia: Vancouver I., Wallace Road, Tod Creek drainage, 50 m, 12 July 1966 (fl), *Turner, Chapman & Barber* 750 (H); Chilliwack Valley, 1200 m, 26 July 1901 (fl), *Macoun* 34087 (K).

U.S.A. Arizona: fide Correll & Correll (1975). California: Amador Co., New York Falls, 600 m, July 1891 (fl), *Hansen* 31 (BM, K, P, US); Butte Co., Jonesville, 1550 m, 16 July 1929 (fl), *Copeland* 381 (BM, H, K, P, TAI, W); Mendocino Co., *c.* 3 km SE. of Fort Bragg, 19 October 1964 (fl & fr), *Thorne & Everett* 34201 (BM). San Diego Co., Palomar Mt., 1800 m, 14 August 1918 (fl), *Spencer* 982 (P). Siskiyou Co.: Salmons Mts, near English Peak, Tobacco L., 1860 m, 1 August 1968 (fl), *Oettinger* 444 (BM). Idaho: Valley Co., Upper Payette L., N. shore, 27 km N. 27 July 1965 (fr), *McCall* in *Hermann* 20305 (BM, W). Montana: Lolo Hot Springs, near Ranger Station, 11 August 1923 (fr), *Kirkman* 1549 (K). Nevada: Ormsby Co., Clear Creek Cañon, 2000–2165 m, 9 June 1902 (fl), *Baker* 1030 (G, W). Oregon: Lane Co., Dexter, Rattlesnake Creek, 21 July 1973 (fl), *van Royen* 10391 (BM, US); Yamhill Co., 1 June 1878 (fl), *Summers* s.n. (K). Washington: King Co., E. of Seattle, Snoqualmie Pass, *c.* 1500 m, 24 August 1969 (fl), *van Royen* 10329 (US); Whatcom Co., Mt. Baker region, Austin Pass, 1200 m, 11 August 1930, *Thompson* 5703 (K).

MEXICO. Baja California: Sierra San Pedro Martír, La Grulla, 2100 m, 21 August 1967 (fl), *Moran & Thorne* 14468 (DS, NY). Baja California Sur: Cape Region, La Laguna, *c.* 1800 m, 16–18 May 1959 (fl), *Thomas* 7917 (CAS, DS).

H. anagalloides is a northern vicariant of *H. parvulum*. It differs from *H. parvulum* in its more diffuse, mat-forming habit, thinner and usually broader leaves, foliose bracts, broader sepals, and shorter styles. Both species would appear to occur in Baja California Sur and to remain distinct there.



Map 44 Sect. 30, Hawaiian distributions: 27. *H. gramineum* (see also Map 27, p. 93) ■; 39c. *H. mutilum* subsp. *mutilum* ●: 46. *H. parvulum* (part, '*H. degeneri*'; see also Map 43, p. 137) □.

48. **Hypericum lalandii** Choisy in DC., *Prodr.* **1**: 550 (1824); D. Dietr., *Syn. pl.* **4**: 1233 (1847); Sonder in Harvey & Sonder, *Fl. cap.* **1**: 118 (1860); Oliver, *Fl. trop. Afr.* **1**: 155 (1868); Baron in *J. Bot., Lond.* **20**: 19 (1889); Engl., *Pflanzenw. Ost-Afrikas* **C**: 274 (1895); Palacky, *Cat. pl. madagasc.* **5**: 17 (1901); Gibbs in *J. Linn. Soc.* (Bot.) **37**: 430 (1906); R. Keller in *Bull. Herb. Boissier* II, **8**: 187 (1908); E. G. Baker in *J. Linn. Soc.* (Bot.) **40**: 26 (1911); Eyles in *Trans. R. Soc. S. Afr.* **5**: 420 (1916); Engl. & Drude, *Veg. Erde* **3**(2): 500 (1921); R. Keller in *Bot. Jb.* **58**: 197 (1923), in Engl. & Prantl, *Nat. Pflanzenfam.* 2nd ed. **21**: 181 (1925), pro parte excl. loc. cit. 'Himalaja, Neuseeland'; H. Perrier in *Archs Bot. Bull. mens.* **1**: 10 (1927); Staner in *Bull. Jard. bot. Etat Brux.* **13**: 70 (1934); Norlindh in *Bot. Notiser* **1934**: 102 (1934); Gomes & Sousa in *Bolm Soc. Estud. Mocamb.* **26**: 42 (1935); Exell & Mendonça, *Consp. fl. angol.* **1**(1): 120 (1937); Bredell in *Bothalia* **3**: 575 + map (1939); H. Perrier in *Not. Syst. Paris* **13**: 270 (1948), in Humbert, *Fl. Madag. et Comores* **135**: 4, t. 1, ff, 7, 8 (1951); Suesseng. & Merxm. in *Proc. Trans. Rhod. scient. Ass.* **43**: 88 (1951); Milne-Redh., *Fl. trop. E. Afr., Hypericaceae*: 7 (1953); Keay, *Fl. W. trop. Afr.* 2nd ed. **1**: 287 (1954); N. Robson in *Kew Bull.* **12**: 445 (1958), in *Fl. Zamb.* **1**: 385 (1961); Spirlet, *Publs I.N.E.A.C., Guttiferae du Congo, (etc.)*: 6 (1966), pro parte, excl. *Hendrickx* 3434; Bamps in *Fl. Congo, Rwanda & Burundi, Guttiferae*: 5 (1970), Jacot Guill., *Fl. Lesotho*: 212 (1971); N. Robson in *Blumea* **20**: 264 (1972), in *Garcia de Orta* (Bot.) **1**: 85 (1973); Killick & N. Robson in Ross, *Fl. Southn. Afr.* **22**: 16 (1976); Bamps, N. Robson & Verdc. in Polhill, *Fl. trop. E. Afr., Guttiferae*: 31 (1978). Type: South Africa, Cap du bon espérance, n.d. (fl & fr), *Laland* (P-holotype; K!, PRE!-photographs).

Map 45.

H. lalandii var. *lanceolatum* Sonder in Harvey & Sonder, *Fl. cap.* **1**: 118 (1860) ['*lanceolata*']. Type: South Africa, Natal, Port Natal, April (fr), *Drege* d (S!-lectotype, Robson, 1973; W!).

H. lalandii var. *latifolium* Sonder in Harvey & Sonder, *Fl. cap.* **1**: 118 (1860) ['*latifolia*']. Type: South Africa, Cape

Prov., Uitenhage, villam Barkhausen, December (fl), *Zeyher* s.n. (S!-holotype).

H. lalandii var. *macropetalum* Sonder in Harvey & Sonder, *Fl. cap.* **1**: 118 (1860). South Africa, Cape Prov., 'bei Boschjemansrivier und Geelhoutboom', below 300 m, December (fl & fr), *Drege* c (S!-holotype; BM!, K!, W!).

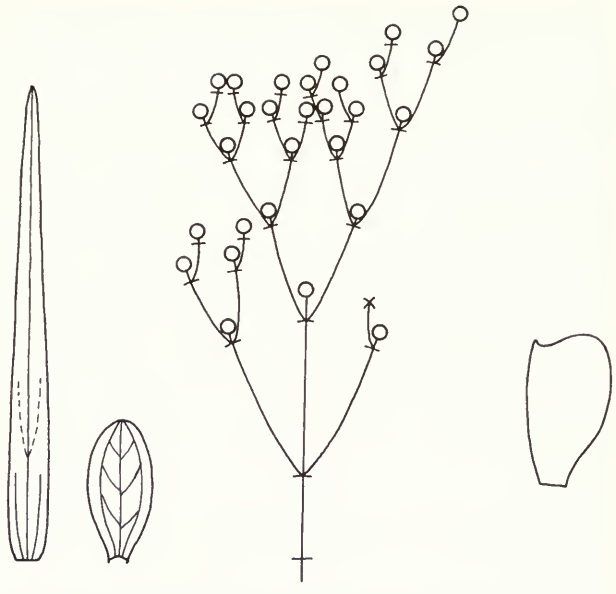
H. comorense Drake in Grandidier, *Hist. phys. Madagascar* Bot., Atlas **3**: t. 338 (1896). Type: Madagascar, Centre, Siralana, entre le lac Alaotra et l'Imerina, n.d. (fr), *Humblot* 636 (P-holotype; K!, W!). According to Perrier de la Bâthie (*Fl. Madag.* Hypéric.: 6), Drake's figure was drawn from the above specimen. *H. lalandii* does not occur in the Comoro Is.

H. stenocarpum Drake in *Bull. mens. Soc. linn. Paris* **2**: 1219 (1898). Type: Madagascar, *Humblot* 636 (as for *H. comorense* Drake) (P-holotype; K!, W!).

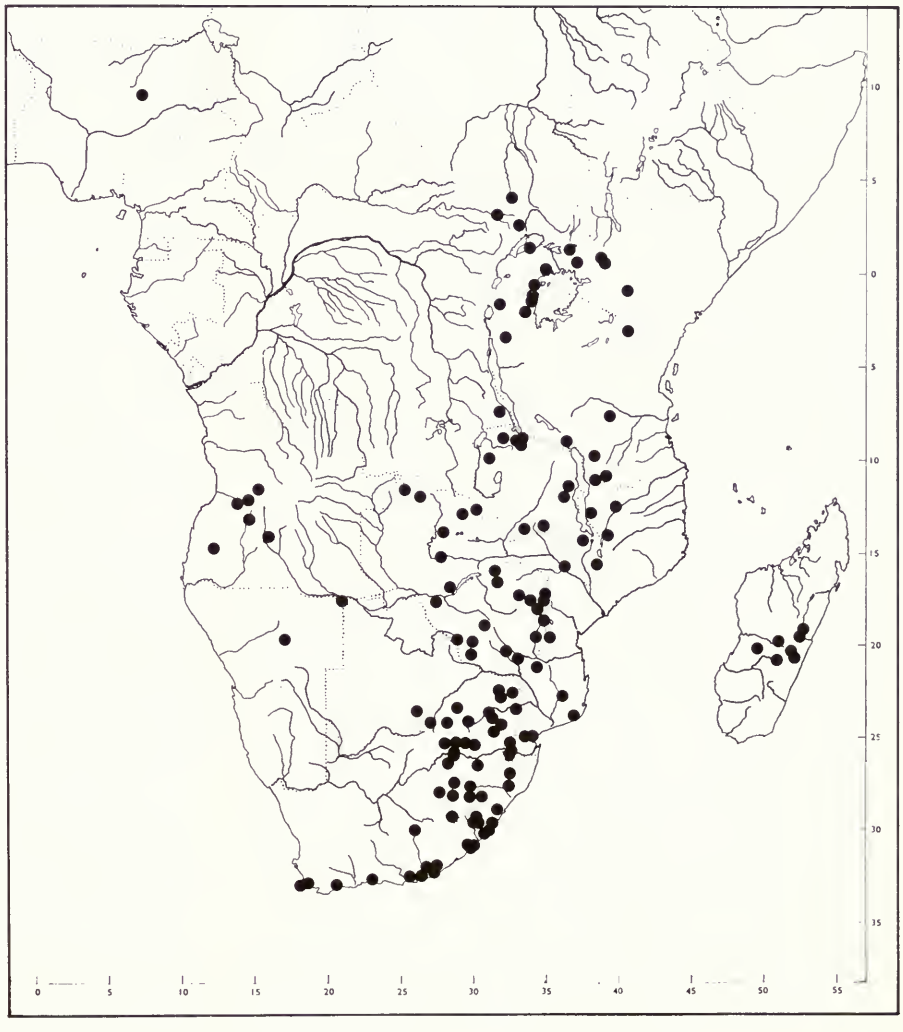
H. japonicum var. *latifolium* (Sonder) Baron in *Revue Madag.* **3**: 760 (1901), ['*latifolia*'] pro parte, excl. syn. *H. rupestre* Bojer.

H. baumii Engl. & Gilg in Warb., *Kunene-Sambesi Exped.*: 306 (1903). Type: Angola, Bié, am Kubango bei Kohi, 1350 m, May 1900, *Baum* 909 (B†-holotype).

H. baumii var. *intermedium* Engl. & Gilg in Warb., *Kunene-Sambesi Exped.*: 307 (1903). Type: Angola, Huila, am Chitanda zwischen Goudkopje und Kukale [Caquele], 1200 m, 3 October 1899 (fl & fr), *Baum* 188 (B†-holotype; E!, W!, Z!-isotypes).



H. lalandii var. *lanceolatum* R. Keller in *Bull. Herb. Boissier* II, **8**: 187 (1908), non Sonder (1860). Type: South Africa, Natal, Port Natal, n.d. (fl), *Guenzius* s.n. (W!-lectotype, mihi); Natal, 1865? (fr), *Gerrard* 190 (W!-syntype; K!, PRE!-photographs).



Map 45 Sect. 30: 48. *H. lalandii*.

H. lalandii var. *madagascariense* R. Keller in *Bull. Herb. Boissier* II, **8**: 188 (1908). Type: Madagascar, Centre, Sud-Betsileo, January 1881 (fl & fr), *Hildebrandt* 3880 (W!-holotype; BM!, Z!).

H. madagascariense (R. Keller) R. Keller in *Bot. Jb.* **58**: 197 (1923), in obs., non Steudel (1840).

H. japonicum var. *stenocarpum* (Drake) H. Perrier in *Archs Bot. Bull. mens.* **1**: 11 (1927).

H. lalandii var. *transvaalense* Bredell in *Bothalia* **3**: 577 + map (1939). Type: South Africa, Transvaal, Bethal Hoggeveld Distr., inter Porter et Trichardsfontein, 1875–1880 (fr), *Rehmann* 6608 (PRE!-lectotype, Robson 1973; BM!-syntype).

H. lalandii var. *valderamosum* Suesseng. & Merxm. in *Proc. Trans. Rhod. scient. Ass.* **43**: 88 (1951). Type: Zimbabwe, Central Marandellas, *Dehn* 26a (M!-holotype).

H. pauciflorum subsp. *involutum* sensu Rodríguez Jiménez in *C. r. Soc. Biogéogr.* **432**: 92, map 9 (1972), in *Mems Soc. Cienc. nat. La Salle* **33**: 105 (1973), pro parte quoad syn. et spec. Afr. et Madag.

Icones: Marloth, *Fl. S. Afr.* **2**(2): t. 64B (1925); H. Perrier, *Fl. Madag. et Comores* **135**: 5, t. I, ff. 7, 8 (1951).

Perennial (? or annual) herb 0·04–0·55(–0·7) m tall, erect to decumbent, not rooting at the base, branching at or near base and sometimes distally, occasionally also elsewhere. *Stems* green, 4-angled, ± ancipitous above; internodes 5–60(–75) mm long, exceeding leaves. *Leaves* sessile, erect or usually ascending, not tetrastichous, persistent; lamina (3–)5–30(–36) × 1–7 mm, upper triangular-lanceolate or narrowly elliptic to linear, lower triangular-ovate to ovate or elliptic, plane or margin ± recurved, not cucullate, midrib prominent beneath and smooth, concolorous or paler beneath, sometimes ± glaucous, subcoriaceous to chartaceous; apex acute to obtuse or (lower leaves) rounded, margin entire, base subcordate-amplexicaul to cuneate, not sheathing, free; basal veins 1–7, only midrib sometimes obscurely branched, tertiary venation very obscure or absent; laminar glands ± dense, not or scarcely prominent. *Inflorescence* 1–*c.* 50-flowered, terminal, branching regularly dichasial/monochasial, rarely with paired flowering branches from 1–3 nodes below; pedicels 1–15 mm long (in fruit), bracts and bracteoles linear to subulate. *Flowers* 6–22 mm in diam., stellate. *Sepals* 2–10 × 1·5–3 mm, subequal to equal, imbricate, lanceolate to oblong-lanceolate or linear-lanceolate, acute; veins 3–7, unbranched; glands linear, distally punctiform. *Petals* yellow or apricot-yellow to orange, sometimes tinged red in bud, 3·5–12 × 1·5–5 mm, 1–2 × sepals, oblanceolate or oblong-spathulate to oblong; apiculus rounded to obsolete; glands absent. *Stamens* 40–60, not grouped, longest 2·5–7 mm long, *c.* 0·3–0·65 × petals. *Ovary* 1–2·5 × 0·6–1·5 mm, narrowly ovoid-conic to narrowly ovoid; styles (2)3–4, 1–4·5 mm long, 0·6–0·9(–1·2) × ovary; stigmas narrowly capitate to subclavate. *Capsule* 3·5–8 × 2·5–4 mm, narrowly ovoid to ovoid-conic or subglobose, 0·8–2 × sepals. *Seeds* 0·6–1 mm long; testa finely scalariform.

Marshes and wet places in grassland ('prairies sèches' in Madagascar); 0 (Natal, Cape Province)–2550 (Kenya) m.

Northern Nigeria (Bauchi Plateau), Sudan Republic, Kenya, and eastern Zaire south to South Africa (Cape Province), west to southern Zaire, Zambia, Namibia; Madagascar (not Comoro Is.).

NIGERIA. North: [Bauchi Plateau], August 1930 (fl & fr), *Lely* P. 622 (K, P).

SUDAN REPUBLIC. Equatoria: Yei R., Lado, 10 November 1919 (fr), *Sillitoe* 432 (K).

KENYA. Rift Valley: Naivasha Distr., Aberdare Mts, Kinangop, Sussex Farm, 2550 m, 1 November 1934 (fl & fr), *Taylor* 1511 (BM).

UGANDA. Eastern: Teso Distr., Serere, 1080 m, December 1931 (fl & fr), *Chandler* 340 (K). Northern: W. Nile Distr., Logiri, 1350 m, 18 March 1945 (fl & fr), *Greenway & Eggeling* 7221 (K). Buganda: Masaka Distr., Kyebe, Budde, August 1945 (fl), *Purseglove* 1782 (K).

ZAIRE. Lac Albert: Aru Faradje (fr), *Lebrun* 3517 (BR n.v.). Shaba: Plateau des Marungu, rive droite de la Kansimba, *c.* 1900 m, February 1970 (fl), *Lisowski, Malaisse & Symoens* 9853 (BR n.v.).

BURUNDI. Mosso, Kininya (fl & fr), *Michel* 3070 (BR n.v.).

TANZANIA. Lake: Biharamulo Distr., Lusahanga, 1350 m, 15 October 1960 (fl), *Tanner* 5208 (K). Western: Ufipa Distr., Ufipa Plateau, E. of Kalambo basin, 14 December 1934 (fl), *Michelmore* 1060 (K). Southern Highlands: Rungwe Distr., Mbaka, 17 February 1912 (fl), *Stolz* 1128 (K, W, Z). Southern: Songea Distr., *c.* 32 km E. of Songea, by R. Mkurira, 900 m, 25 December 1955 (fl), *Milne-Redh. & Taylor* 7884 (K).

MALAWI. North: Mzimba, 3·2 km E. of Mzuzu, 1200 m, 8 April 1977 (fl & fr), *Phillips* 1964 (Z). Central: Fort Manning, Bua R., 1250 m, 7 January 1959 (fl & fr), *Robson* 1085 (BM, K). South: Mlanje Mt., Luchenya Plateau, 11 February 1958 (fl & fr), *Chapman* 478 (K).

ZAMBIA. North: Mbala Distr., Saisi Valley, 1500 m, 22 January 1970 (fl & fr), *Sanane* 1041 (K). Central: Broken Hill Distr., Molungushi R., February 1907 (fl & fr), *Allen* 468 (K, SRGH). West: Mwinilunga Distr., R. Luno between R. Matonchi and R. Kasomba, 1 November 1937 (fl), *Milne-Redh.* 3048 (BM, K, PRE). South: Choma, 26 March 1955 (fl & fr), *Robinson* 1174 (K, SRGH).

ANGOLA. Malange: Malange, October 1879 (fl), *Mechow* 295 (Z). Bié: rio Cuchi, Ilhana Canona, 5 May 1906 (fl & fr), *Gossweiler* 3170 (BM, K) Benguela: Hochland zwischen Ganda und Caconda, Xongorola, *c.* 1700 m, December 1933 (fl & fr), *Hundt* 778 (BM, Z). Huila: a sul do Mosso Eputo, rio Nene, 9 December 1955 (fl & fr), *Mendes* 1049 (BM).

NAMIBIA. Waterberg Distr.: Waterberg plateau, December 1935 (fl & fr), *Boss* in Herb. Transvaal Mus. 34997 (K).

BOTSWANA. South-east: Gaborone, Aedume Park, Gaborone Dam, 1050 m, 22 October 1977 (fl & fr), *Hansen* 3248 (BM).

ZIMBABWE. North: Miami, July 1926 (fl & fr), *Rand* 350 (BM). West: Matobo, Quaringa, December 1953 (fl & fr), *Miller* 2003 (K, PRE, SRGH). Central: Makoni, prope pagum Rusapi, *c.* 1400 m, 26 October 1930 (fl & fr), *Fries, Norlind & Weimarck* 2278 (BM, LU, PRE, SRGH). East: Stableford For. Res., Central Patrol, 1755–1770 m, 9 June 1934 (fl & fr), *Gilliland* B222 (BM, K, SRGH). South: Buhera, Sabi [R.], March 1954 (fl), *Davies* 706, (SRGH).

MOZAMBIQUE. Niassa: Metonia, Vila Cabral, 30 October 1934 (fl & fr), *Torre* 558 (COL, LISC). Manica e Sofala: Lower Mswirizwi, 300 m, 2 November 1906, *Swynnerton* 1748 (BM). Sul do Save: Xoguno [a] Inhambane, Nhalve, 26 October 1935 (fl & fr), *Lea* 116 (PRE). Maputo: Namaacha, 5 May 1971 (fl & fr), *Marques* 2265 (BM).

SWAZILAND. Mbabane Distr., *c.* 5 km NE. of Forbes' Reef, 13 February 1962 (fr), *Schlieben* 9531 (K).

TRANSVAAL. Pietersburg Distr.: Blauwberg, Mohla-

keng plateau, 1560 m, 11 January 1955 (fl & fr), *Dyer* 8992 (K). Lydenburg Distr.: Lydenburg, November 1894 (fl & fr), *Wilms* 134 (BM, K, Z). Pretoria Distr.: Rayton, *c.* 1350–1550 m, 19 November 1957 (fl), *Merxmüller* 330 (K, W); Ermelo Distr. Bereton Park, Outspan near Sheepmoor, February 1960 (fr), *de Winter* 7580 (K).

ORANGE FREE STATE. Bethlehem Distr.: Broomlands 546, *c.* 1710 m, 7 March 1939 (fl & fr), *Scheepers* 1791 (K); Ficksburg Distr.: mtn. top Braamhoek, 1800 m, 19 October 1934 (fl), *Galpin* 13972 (K).

NATAL. Entojaneni Distr.: Melmoth, 1 December 1919 (fl & fr), *Mogg* 6052 (SING, W). Bergville Distr.: Cathedral Peak For. Res. Stn., 1875 m, 30 November 1950 (fl), *Killick* 1173 (K). Alfred Distr.: Weza Ingeli slopes, 2 January 1966 (fl), *Strey* 6316 (K).

LESOTHO. Sehlabathebe, February 1912 (fl & fr), *Jacottet* 223 (Z).

CAPE PROVINCE. Port St. Johns Distr.: Ndindini, 10 November 1970 (fl), *Strey* 10109 (K). Port Elizabeth Distr.: 11·2 km from Ann's Villa on Zuurberg Pass, *c.* 840 m, 4 March 1959 (fl & fr), *Acocks* 20298 (K). George Distr.: in humidis prope George, 21 March 1893 (fl & fr), *Schlechter* 2373 (BM, FR, W, Z). Caledon Distr.: Sir Lowry's pass, farm Knoshoek, *Marloth* 4866 (PRE*). Hay Distr.: Witsand, 1·6 km W. of Doornaar homestead, *c.* 1260 m, 19 January 1960 (fl & fr), *Leistner* 1613 (BM, K, W). Steynsburg Distr., Steynsburg, 630 m, 20 April 1919 (fl), *Schonland* 3213 (K).

MADAGASCAR. Centre: Ankafana, 1880 (fl & fr), *Deans Cowan* s.n. (BM); Prov. Vakinankaratra, Distr. Ambatolampy, 15 km SE. of Ambatolampy, *c.* 1600 m, 29 November 1912 (fl), *Viguier & Humbert* 1764 (P); Ambositra, Berg Anteby, 11 February 1960 (fl & fr), *Apperl* 26 (Z); Mahabo, January 1889 (fr), *Scott Elliott* 1895 (K).

H. lalandii is clearly very closely related to the Colombian 28. *H. relictum*, but can be superficially very similar to 44. *H. paucifolium*. The most luxuriant specimen that I have seen (Natal, Alexandra Distr., Dumisa, *Rudatis* 793 (BM)) can, however, be distinguished from the Morelos form of *H. paucifolium* (p. 134), by the narrower (subclavate, not broadly capitate) stigmas and the longer styles that are longer than (not equalling or shorter than) the ovary.

The most primitive forms of *H. lalandii* occur on either side of the Natal-Transvaal border, whence there are reduction trends (in general) south to the Cape of Good Hope and north and west to Angola and Nigeria. As the possibility of the ancestors of *H. lalandii* having reached southern African overland from Colombia (i.e. before the Atlantic Ocean was formed) would seem to be negligible (see p. 11), its arrival in that region must almost certainly have been the result of ancient long-distance transport (by migrating birds?).

The variation in *H. lalandii* is very great over its wide range, but ther are almost no discontinuities. Even Bredell's var. *transvaalense*, with prominently gland-dotted stem and leaves narrowly lanceolate rather than narrowly elliptic to linear, appears to be merely a local variant that does not merit taxonomic recognition. The Madagascar plants all have narrowly ovoid-conic capsules 1·5–2 times as long as the sepals; but this form is linked to the more usual broader and relatively shorter capsules by South African specimens, so that it is not desirable to recognize Keller's var. *madagascariense*.

49. **Hypericum globuliferum** R. Keller in *Bot. Jb.* **58**: 197 (1923); N. Robson in *Garcia de Orta* (Bot.) **1**: 86 (1973).

Type: Madagascar, Ost-Imerina, Andrangoloaka, November 1880 (fl & fr), *Hildebrandt* 3725 (W!-holotype; BM!, H!, JE!, K!, M!, P!, Z!).

Map 46.

H. japonicum sensu Baron in *J. Bot., Lond.* **20**: 19 (1882); Palacky, *Cat. Pl. Madag.* **5**: 17 (1906).

H. japonicum var. *latifolium* sensu Baron in *Revue Madag.* **3**: 760 (1901), ['*latifolia*'] pro parte quoad syn. *H. rupestre* Bojer.

H. japonicum var. *pseudocrispum* R. Keller in *Bull. Herb. Boissier* II, **8**: 186 (1908); H. Perrier in *Archs Bot. Bull. mens.* **1**: 10 (1927). Type as for *H. globuliferum*.

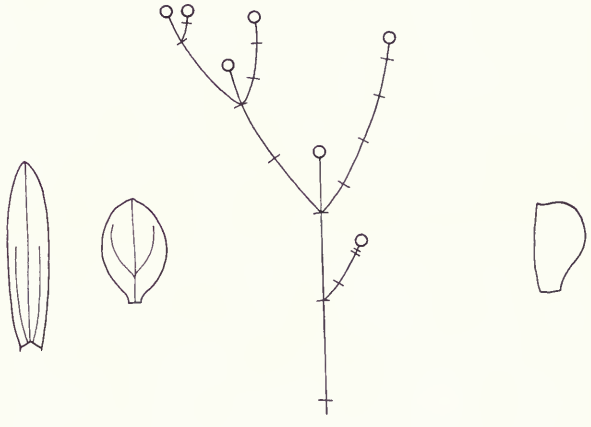
H. japonicum var. *rupestre* R. Keller in *Bull. Herb. Boissier* II, **8**: 186 (1908). Type: Madagascar, Ermina [Imerina], March 1830 (fl), *Bojer* II 32 (W!-holotype; K!).

H. rupestre Bojer ex R. Keller in Engl. & Prantl, *Nat. Pflanzenfam.* 2nd ed. **21**: 181 (1925); H. Perrier in *Archs Bot. Bull. mens.* **1**: 9 (1927), pro parte, quoad typum et syn. *H. japonicum* var. *rupestre*; non Jaub. & Spach (1842).

H. japonicum var. *stenocarpum* sensu H. Perrier in *Archs Bot. Bull. mens.* **1**: 11 (1927), pro parte excl. typum.

H. japonicum subsp. *pseudocrispum* forma *paludicola* H. Perrier in *Phanérogamie* **13**: 270 (1948); in Humbert, *Fl. Madag. et Comores* **135**: 7 (1951) ['*paludicolum*']. Type: Madagascar, Centre, Manankazo au NE. d'Ankazobe, 1500 m, September 1913 (fl & fr), *Perrier de la Bâthie* 3464 (P!-lectotype, Robson, 1973).

H. pauciflorum subsp. *involutum* sensu Rodríguez Jiménez in *C.r. Soc. Biogéogr.* **432**: 92, map 9 (1972), in *Mems Soc. Cienc. nat. La Salle* **33**: 105 (1973), pro parte. See also p. 147.



Icon: H. Perrier in Humbert, *Fl. Madag. et Comores* **135**: 5, t.1, ff.9–13 (1951).

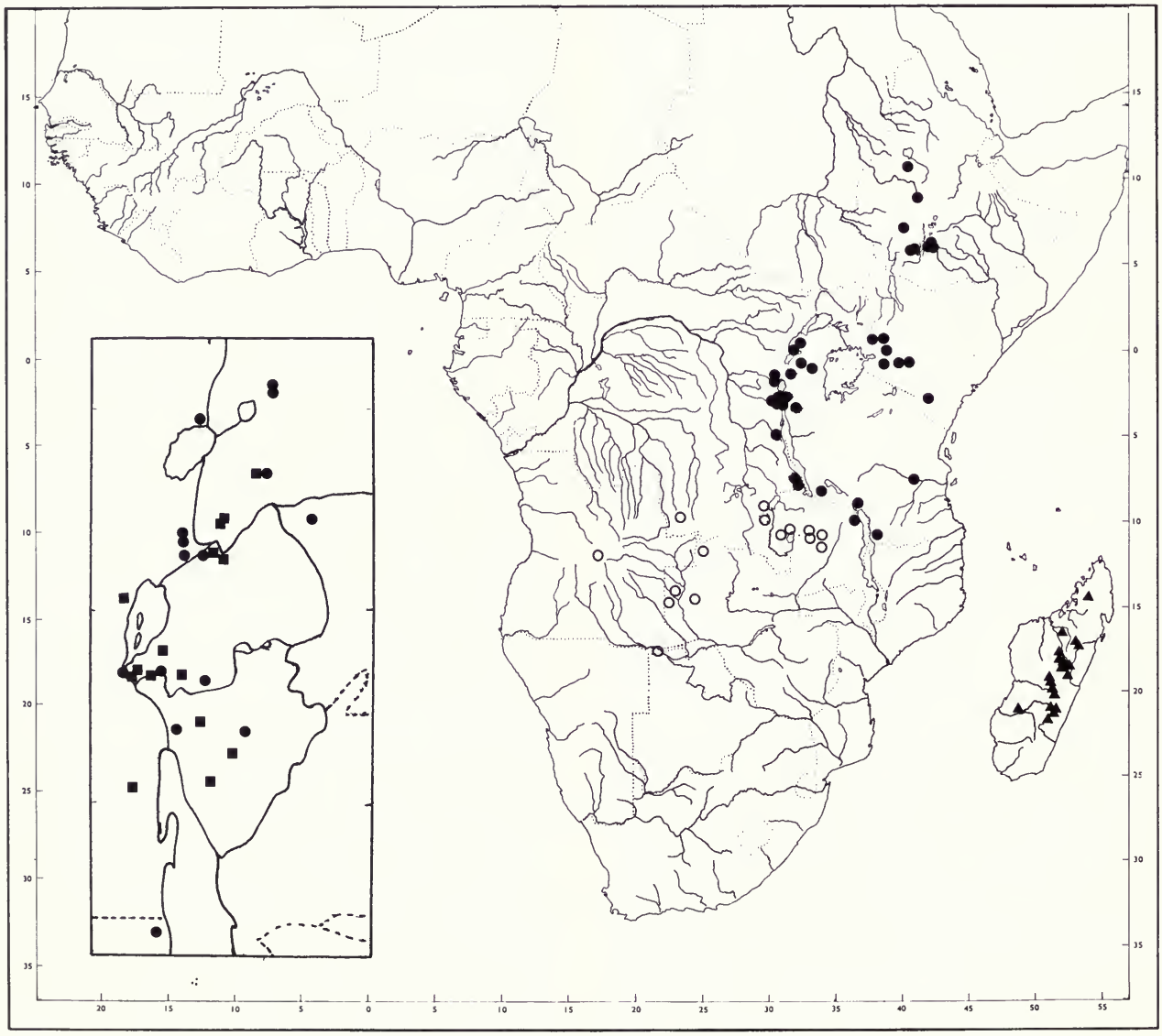
Perennial herb with stems 0·04–0·35 m long, prostrate or pendent to ascending, sometimes rooting at the base, branches spreading from the base and sometimes pinnately ascending distally. *Stems* green, 4-angled, ancipitous above; internodes 5–30 mm long, exceeding leaves. *Leaves* sessile or very shortly petiolate, erect or usually ascending to spreading, not tetrastichous, persistent; lamina 3–12 × 1–5 mm linear-oblong or lanceolate to (i) ovate or oblong-ovate or broadly elliptic or (ii) oblanceolate-spathulate to suborbicular, plane or margin ± recurved to indurated, not cucullate, midrib slightly prominent beneath and smooth, rather densely to not glaucous beneath, coriaceous to chartaceous; apex obtuse to rounded, margin entire to finely eroded-denticulate, base

cordate-amplexicaul to cuneate, not sheathing, free; basal veins 1–5, unbranched, tertiary venation obscure or absent; laminar glands dense, not prominent. *Inflorescence* 1-flowered or secondarily dichasial/monochasial (2–5-flowered), sometimes with pinnate flowering branches to near base of stem; primary pedicels 4–25 mm long, not incrassate; bracts foliar. *Flowers* 6–11 mm in diam., stellate. *Sepals* 2·5–9 × 0·7–3 mm, elliptic or oblong to linear or to oblanceolate-spathulate or obovate, acute to rounded; veins 1–5(–11) unbranched; glands basally linear or all punctiform. *Petals* deep yellow to orange, not tinged red in bud, 3–7 × 1–4 mm, about equalling or shorter than sepals, oblong-oblanceolate to obovate or elliptic, apiculus minute, subacute, or obsolete; glands absent. *Stamens* 16–30, not grouped or obscurely 3-fascicled, longest 2–4 mm long, 0·5–0·75 × petals. *Ovary* 1·1–2·5 × 0·8–1·1 mm, narrowly ovoid to subglobose; styles 3, 0·8–2·5 mm long, 0·6–1 × ovary; stigmas narrowly clavate. *Capsule* 2·5–4 × 2–3 mm, cylindric-ellipsoid to subglobose, shorter than sepals. *Seeds c.* 0·7 mm long; testa finely scalariform to scalariform-reticulate.

Dry to wet grasslands, marshes or dripping rocks; 600–2000 m. Madagascar (mainly east-central).

MADAGASCAR. Est: Anosibe, au sud de Moramanga, 6 September 1942 (fl & fr), *Decary* 18314 (P). Centre: Mt. Anteby above Ambositra, 14 December 1894 (fl & fr), *Forsyth Major* 672 (K), 687 (K); Antsihanaka (Alaotra), n.d. (fl & fr), *Humblot* 620 (K, P, W); near Tananarive, Ambohipo, – January – (fl & fr), *Scott Elliott* 1749 (BM, K, P); environs d'Ambalavao, 1200 m, n.d. (fl & fr), *Perrier* 14628 (P). Ouest: Masakoamena, bassin du Bemarivo (Boina), *c.* 6000 m, 1921? (fl & fr), *Perrier* 3488 (P).

There are two main habitat forms of *H. globuliferum*: (i) a lower-altitude (600–1500 m) form of marshes and dripping rocks, with elongate, ascending or pendent stems, leaves usually rather narrow, with reflexed or indurated to eroded-denticulate margin, glaucous beneath and usually with midrib depressed, and sepals relatively narrow (oblong-elliptic to linear); (ii) a higher-altitude (1000–2000 m) form of dry to wet grasslands, with shorter, prostrate radiating stems, leaves rather broad with plane entire margin, not glaucous beneath or with depressed midrib, and sepals relatively broad

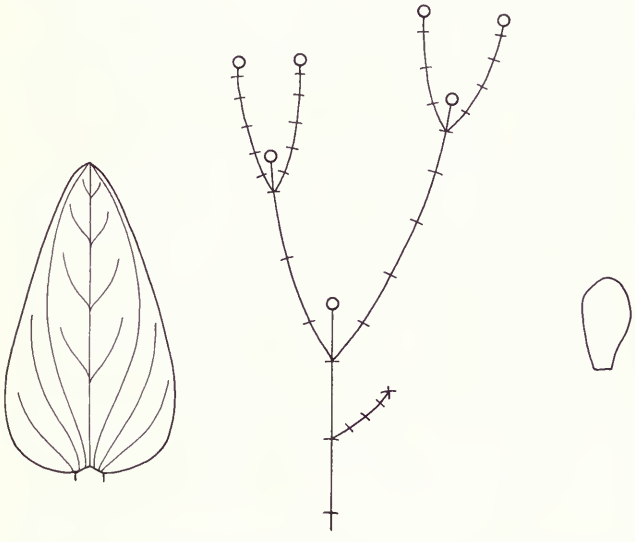


Map 46 Sect. 30. A: 49. *H. globuliferum* ▲; 51. *H. scioanum* ●; 52. *H. oligandrum* ○. B (inset, Rwanda, Burundi and adjacent regions): 50. *H. humbertii* ■; 51. *H. scioanum* ●.

(obovate to lanceolate or narrowly oblong). In a previous paper (Robson, 1973), I treated these as subspecies, whereas Perrier de la Bâthie (1951) regarded them as formae. If *H. globuliferum* is included in this species as an extreme form of (i) (as I now think that it is), then my *H. perrieri* falls into synonymy. It seems unnecessary to give the habitat forms formal rank, as the range of variation with the species appears to be continuous and there is no geographical differentiation between the forms (see map in Robson, 1973). If a subsequent author were to give them formal ranks, form (i) would be the type and form (ii) would require a new combination under *H. globuliferum*.

50. **Hypericum humbertii** Staner in *Bull. Jard. bot. État Brux.* **13**: 69 (1934); Robyns, *Fl. Sperm. Parc Nat. Albert* **1**: 619 (1948); Gillett & Milne-Redh. in *Kew Bull.* **5**: 343 (1951); Milne-Redh., *Fl. trop E. Afr.* Hypericaceae: 12 (1953); N. Robson in *Kew Bull.* **12**: 444 (1958); Spirlet, *Publs I.N.E.A.C., Guttiferae du Congo (etc.)*; 5 (1966), pro parte excl. *Troupin* 2669; Bamps, *Fl. Congo, Rwanda & Burundi* Guttiferae: 6 (1970) in *Bull. Jard. bot. natn. Belg.* **41**: 436 (1971), *Distr. Pl. afr.* **3**: t. 70 (1971); N. Robson in *Garcia de Orta* (Bot.) **1**: 86 (1973); Bamps, N. Robson & Verdc. in Polhill, *Fl. trop. E. Afr.* Guttiferae: 31 (1978). Type: Zaire, Kivu, mountains W. of Kivu, Kanzibi Marsh, 2000 m, February–March 1929 (fl), *Humbert* 7503 (BR-holotype; K!-isotype).

Fig. 22A, Map. 46B.



H. stolzii sensu Milne-Redh. in *Kew Bull.* **3**: 455 (1948), pro parte, quoad syn. *H. humbertii.*

Perennial herb, with stems 0·15–1 m long, prostrate to ascending, rooting at lower nodes, without or with few branches below inflorescence. *Stems* green, 4-angled, ancipitous above; internodes 5–38 mm long, exceeding leaves. *Leaves* sessile, ascending or usually spreading, not tetrastichous, persistent; lamina 5–25 × 2–11 mm, elliptic-ovate to broadly triangular-ovate, plane, not cucullate, midrib slightly prominent beneath and smooth, concolorous, not glaucous, chartaceous; apex obtuse to rounded, margin entire, base cordate-amplexicaul, not sheathing, free; basal veins 5–7(–9), sometimes distally branched, tertiary venation obscure; laminar glands dense, not prominent. *Inflorescence* 1-flowered, pseudo-dichotomous, branching often sympodial and then flowers pseudo-axillary, rarely with 1–2 flowering branches from proximal node(s); primary pedicels 8–25 mm long in fruit; bracts foliar, reduced. *Flowers* 10–18 mm in diam., stellate. *Sepals* 4–6 × 1·3–2 mm, equal, scarcely imbricate, lanceolate to oblong-lanceolate, acute; veins 3–5, unbranched; glands all linear or distally punctiform. *Petals* yellow or apricot-yellow to orange, not tinged red in bud?, (5–)7–8 × 2·5–4 mm, *c.* 1·5 × sepals, obovate to oblong; apiculus and glands absent. *Stamens* 35–45, indistinctly 3-fasciculate, longest 4–5 mm long, *c.* 0·5–0·65 × petals. *Ovary* 2–2·5 × 1–1·5 mm, ± narrowly ovoid-ellipsoid; styles 3, 1·2–1·5 mm long, *c.* 0·6 × ovary; stigmas narrowly clavate. *Capsule* 4–5 × 2–3 mm, ellipsoid, obtuse to rounded, about equalling sepals. *Seeds* 0·5–0·65 mm long; testa ribbed-scalariform.

Swamps in upland grassland; 1700–2600 m.

Uganda (Kigezi), Zaire (Kivu), Rwanda, Burundi.

UGANDA. Western: Kigezi Distr., Bufumbira Co., Echuya Forest Bog, 2300 m, 26 April 1970 (fl & fr), *Lye* 5346 (K); Kigezi Distr., Kanaba Gap, October 1947 (fl & fr), *Purseglove* 2480 (K).

ZAIRE. Kivu: terr. Kabare, Kaniola, 1900 m, 9 May 1959 (fr), *Léonard* 4107 (BR n.v., K); Luemba, (fl), *Hendrickx* 3434 (BR n.v.); see also type.

RWANDA. Cyanguangu: Mugariro, 2000 m, 24 March 1956 (fl), *Christiansen* 1580 (BR n.v., K). Byumba: marais de la Rugezi, *c.* 2000 m, 6 October (fl), *van der Ben* 2354 (BR n.v., K).

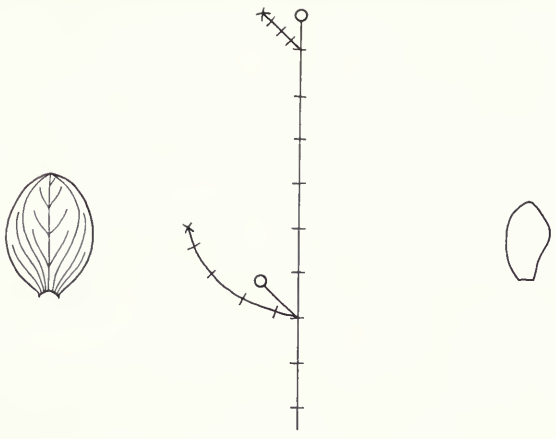
BURUNDI. Mwaro: Kisozi, 2200 m, 11 April 1971 (fl), *Lewalle* 5492 (K). Luvironza (fl), *Michel* 4528 (BR n.v.).

H. humbertii has clearly been derived from the variable *H. lalandii*, not, as I suggested previously (Robson, 1973), from South American species. The change from erect (in *H. lalandii*) to ascending or prostrate habit has been accompanied, as usual, by (a) an alteration from dichasial to pseudo-dichotomous inflorescence-branching with the bracts becoming foliar and (b) broadening of the leaves. Other characters continue reduction trends visible in *H. lalandii.*

51. **Hypericum scioanum** Chiov. in *Annali Bot.* **9**: 317 (1911); Milne-Redh., *Fl. trop. E. Afr.* Hypericaceae: 10, t. 2 (1953); N. Robson in *Kew Bull.* **12**: 436, 445 (1958), in Exell & Wild, *Fl. Zamb.* **1**: 386 (1961); Spirlet in *Publs I.N.E.A.C., Guttiferae du Congo (etc.)*: 5 (1966); Moggi & Pisacchi in *Webbia* **22**: 278, t. 15 (1967); Bamps in Boutique, *Fl. Congo, Rwanda & Burundi*, Guttiferae: 7 (1970), in *Bull. Jard. bot. natn. Belg.* **41**: 437 (1971), in *Distr. Pl. afr.* **3**: t, 71 (1971); Lisowski, Malaisse & Symoens in *Bolm Soc. broteriana* II, **44**: 232 (1970); N. Robson in *Garcia de Orta* (Bot.) **1**: 86 (1973); Agnew, *Upland Kenya wild fls*: 187 f. (1974); Bamps, N. Robson & Verdc. in Polhill, *Fl. trop. E. Afr.*, Guttiferae: 31 (1978). Type: Ethiopia, Scioa [Shoa], collina Entotta, Valone del piccolo Cabanna nille ericiae, 2600 m, 27 April 1909 (fl), *Negre* 332 (F!-holotype; K!-fragment & drawing).

Fig. 22B, Map 46.

H. stolzii Briq. in *Ann. Conserv. Jard. bot. Genève* **20**: 391 (1919); Milne-Redh. in *Kew Bull.* **3**: 455 (1948), pro parte, excl. syn. *H. humbertii*. Type: Tanzania, S. Highlands, Rungwe Distr., Nyassa Hochland, Kyimbila, 1913 (fl), *Stolz* 2223 (G-holotype; W!, Z!-isotypes).



H. thoralfii T.C.E.Fries in *Notizbl. bot. Gart. Mus. Berl.* **8**: 566 (1923) ['*thoralfi*']. Type: Kenya, Central, N. Nyeri Distr., W. side of Mt. Kenya, 2300 m, 26 December 1921 (fl), *R. E. & T. C. E. Fries* 326 (UPS-holotype; K!, Z!-isotypes).

H. afropalustre Lebrun & Taton in *Bull. Jard. bot. État Brux.* **28**: 279 (1947); Robyns, *Fl. Sperm. Parc Nat. Albert* **1**: 619 (1948). Type: Zaire, Kivu, Mt. Mikeno, Kikeri Marsh, November 1937 (fl), *Lebrun* 8512 (BR-holotype; K!-isotype).

Icones: Milne-Redh., *Fl. trop. E. Afr.* Hypericaceae: t.2 (1953); Moggi & Pisacchi in *Webbia* **22**: 281, t.15 (1967).

Perennial herb with slender stems 0·05–0·35 m long, prostrate to ascending, rooting at lower nodes, unbranched or branched and forming tufts or mats. *Stems* green, 4-angled, ancipitous above; internodes 3–30 mm long, exceeding leaves. *Leaves* sessile, spreading, not tetrastichous, persistent, lamina 3–10 × 2–8 mm, ovate or elliptic to obovate or suborbicular, plane, not cucullate, veins slightly prominent beneath and smooth, concolorous, not glaucous, thinly chartaceous; apex rounded, margin entire, base rounded-subamplexicaul to broadly cuneate, not sheathing, free; basal veins (5)7, sometimes branched distally, especially midrib, tertiary venation dense, ± obscure; laminar glands dense, not prominent. *Inflorescence* 1-flowered, pseudo-dichotomous, branching often sympodial and then flowers pseudo-axillary, sometimes with 1–3(–6) flowering branches from proximal node(s); pedicels 5–15(–18) mm long in fruit; bracts foliar, not reduced. *Flowers* 4–8 mm in diam., stellate. *Sepals* 3–4 × 0·5–1·5 mm, unequal, scarcely imbricate, lanceolate to oblong, acute to obtuse; veins 3–5, unbranched; glands linear, distally punctiform. *Petals* apricot-yellow to orange, sometimes tinged red in bud, 3·5–6(–7) × 2–3 mm, equalling or slightly exceeding sepals, obovate to elliptic or oblong; apiculus and glands absent. *Stamens* 15–30, indistinctly 3-fasciculate or not grouped, longest 2·5–3 mm long, *c.* 0·5–0·75 × petals. *Ovary* 1·5–2 × 0·9–1·2 mm, ovoid-ellipsoid to subglobose; styles (2)3(4), 0·7–1·5 mm long, 0·5–0·65 × ovary; stigmas narrowly capitate-clavate. *Capsule* 3–5–4·5(–6) × 2·5–3 mm, ellipsoid to subglobose, obtuse to rounded, about equalling sepals. *Seeds* *c.* 0·7 mm long; testa ribbed-scalariform. 2n = 16.

Swamps, bogs, and fallows, usually on acid peat; (1350–)1500–3500 m.

Ethiopia and Kenya to northern Malawi (Nyika) north-eastern Zambia (Nyika), and Zaire (Kivu, Shaba).

ETHIOPIA. Gojjam: Lake Tana region, 80 km S. of L. Tana, Dangila, 1800 m, 11 February 1926 (fl), *Cheeseman* s.n. (BM). Shoa: see type. Keffa: Jimma, n.d. (fl & fr), *Jimma Agr. Techn. Sch.* C-85 (EA, K). Gamo-Gofa: Cencia, 16 March 1938 (fl), *Vatova* 2072 (FI). Sidamo: Agheresalam, Irba Mode, 2900 m, 29 November 1937 (fl), *Senni* 2265 (FI). Bale: Garamba, Gajaso, 3100 m, 17 March 1958 (fl), *Smeds* 1161 (K).

KENYA. Central: N. Nyeri Distr., W. side of Mt. Kenya, 2300 m, 26 October 1921 (fl), *R. E. & T. C. E. Fries* 326 (K, Z). Rift Valley: Naivasha Distr., Aberdare Mts., Kinangop, Sussex Farm, 3060 m, 26 October 1934 (fl), *Taylor* 1278 (BM); Nakuru Distr., Mau For. Res., 2650 m, 31 August 1949 (fr), *Maas Geesteranus* 5995 (K, Z); Eldoret Distr., Elgeyo Escarpment, 2400 m, pre 1926 (fl), *Harger* s.n. (BM); Trans-Nzoia Distr., Mt. Elgon, above Japata estate, 3000 m, 1 March 1948 (fl), *Hedberg* 182 (K).

UGANDA. Eastern: Mbale Distr., Bugishu, Mt. Elgon, W. slope above Butadiri, 3500 m, 6 December 1967 (st), *Hedberg* 4502 (K). Western: Toro Distr. Ruwenzori, Mubuku Valley, August 1938 (fl), *Purseglove* 244 (K); Ankole Distr., Mbarara, Ruizi falls, 1950 m, 21 October 1934 (fl), *Taylor* 1082 (BM); Kigezi Distr., Kanaba Gap, December 1938 (fl), *Chandler* 2620 (K).

ZAIRE: Kivu: contre forts W. du volcan Mikeno, 16 August 1937 (fl), *Louis* 5217 (K); terr. Kabare, Kaniola, 1900 m, May 1959 (st), *Léonard* 4109 bis (K). Shaba: Marungu Mts., à 8 km SSW. de Pepa, 1880 m, 27 Novembr 1969 (fl & fr), *Lisowski, Malaisse & Symoens* 8819 (BR n.v., K).

RWANDA. Gikongoro: Mudasomwa, forêt de Nyungwe, marais de Rwasenkoko, 2400 m, 11 June 1978 (fr), *Raynal* 20469 (BM).

BURUNDI. Terr. Bubanza, Ijenda, 2100 m, 19 October 1967 (fl), *Lewalle* 2104 (BM, K).

TANZANIA. Lake: Bukoba Distr., Kishanda, 1350 m, December 1931 (fl & fr), *Haarer* 2338 (K). Northern: Moshi Distr., Kilimanjaro, 2640 m, 21 February 1933 (fl & fr), *Rogers* 1 (K). Western: Ufipa Distr., Malonje, 2250 m, 21 November 1949 (fl & fr), *Bullock* 1894 (K). Eastern: Morogoro Distr., Uluguru Mts., Mgeta R. gorge, 1500 m, 15 March 1953 (fr), *Drummond & Hemsley* 1606 (K). S. Highlands: Mbeya Distr., Kikondo, 20 October 1957 (fl & fr), *Richards* 6662 (K); Rungwe Distr., Kiwira R., 2250 m, October 1959 (fl & fr), *Procter* 1423 (K). Southern: Songea Distr., Lungingitwe R., 1570 m, 27 May 1956 (st), *Milne-Redh. & Taylor* 10469 (K).

MALAWI. Northern: Nyika Plateau, L. Kaulime, 2200 m, 23 October 1958 (fl & fr), *Robson* 291 (BM, BR, K, LISC, PRE, SRGH).

ZAMBIA. Eastern: Nyika, 28 December 1962 (fl & fr), *Fanshawe* 7283 (K).

H. scioanum is a 'reduced version' of *H. humbertii*, differing in the rounded to cuneate leaf-base and the smaller flowers with fewer stamens.

52. **Hypericum oligandrum** Milne-Redh. in *Kew Bull.* **3**: 454 (1949); N. Robson in *Kew Bull.* **12**: 436, 445 (1958), in Exell & Wild, *Fl. Zamb.* **1**: 386 (1961); Bamps in Boutique, *Fl. Congo, Rwanda & Burundi*, Guttiferae: 4 (1970), in *Bull. Jard. bot. natn. Belg.* **41**: 435 (1971), in *Distrib. Pl. afr.* **3**: t.68 (1971); N. Robson in *Garcia de Orta* (Bot.) **1**: 86 (1973); Bamps in *Garcia de Orta* (Bot.) **2**: 73 (1975); Killick in *Bothalia* **12**: 633 (1979). Type: Zambia, Western, Mwinilunga Distr., R. Lunga just below R. Mudhanyama, 25 November

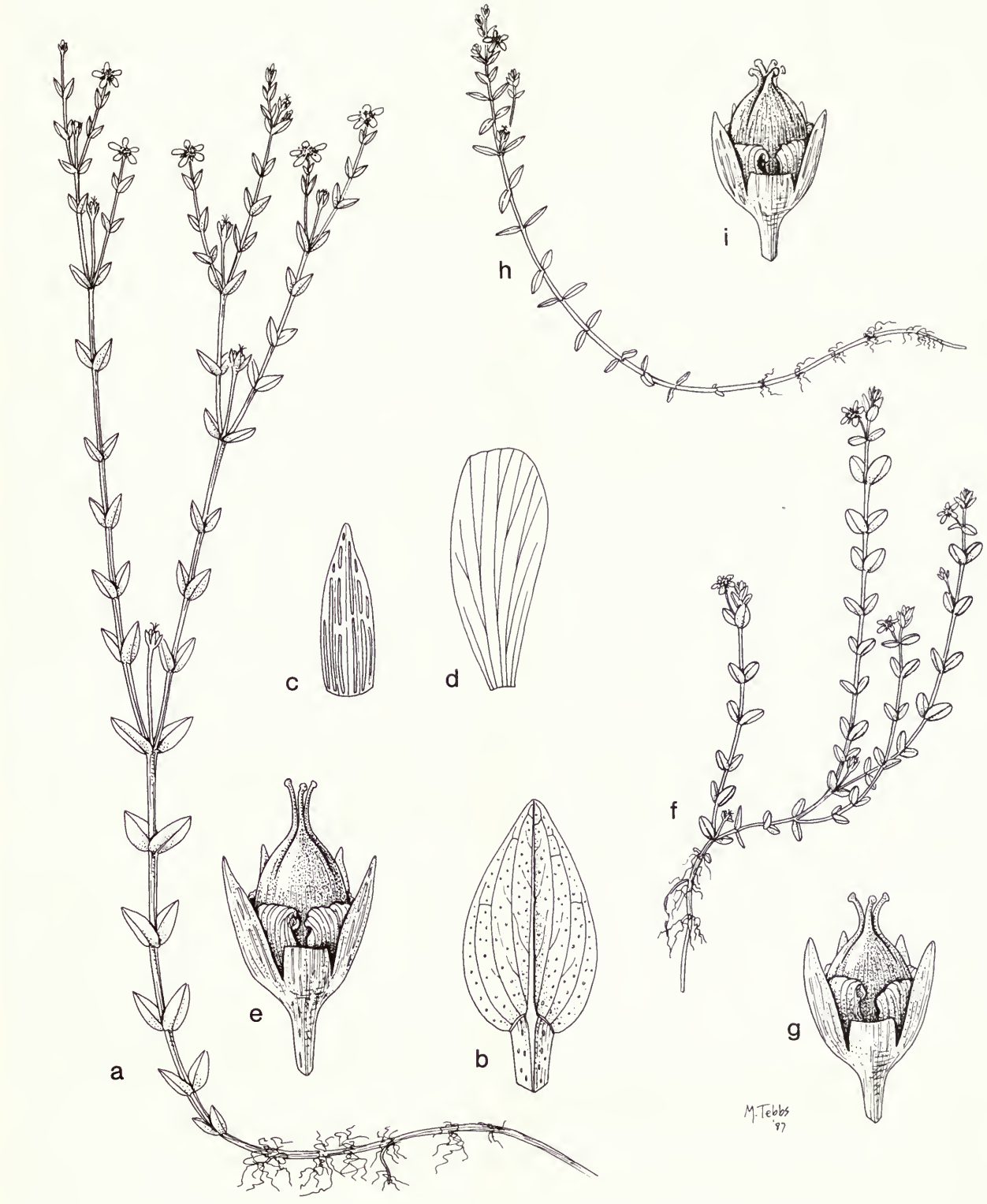
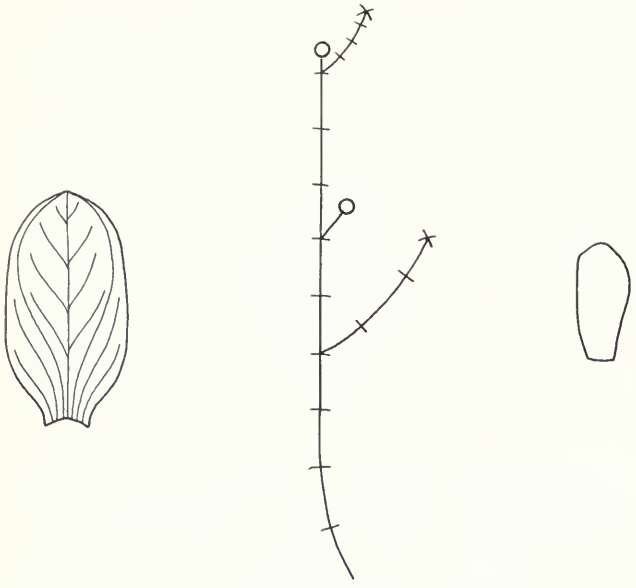


Fig. 22 A. *H. humbertii*: (a) habit; (b) stem with leaf; (c) sepal; (d) petal; (e) capsule with old outer floral parts (sepal partly cut away). B. *H. scioanum*: (f) habit; (g) capsule with old outer floral parts (sepal partly cut away). C. *H. oligandrum*: (h) habit; (i) capsule with old outer floral parts (sepal partly cut away) (a, f, h × ½; b × 2; c–e, g, i × 5). A. *Lewalle* 5492. B. *Taylor* 1832. C. *Milne-Redhead* 3399.



1937 (fl & fr), *Milne-Redhead* 3399 K!-holotype; BM!, BR!, PRE!-isotypes).

Fig. 22C, Map 46.

Perennial or annual herb with stems up to 0·25 m long, procumbent or ascending to suberect, rooting at lower nodes, branching from near base and forming mats. *Stems* green, 4-angled, ancipitous above, internodes 5–20 mm long, exceeding leaves. *Leaves* sessile, spreading, not tetrastichous, persistent; lamina (2–)3–12 × (1·5–)2–6 mm, ovate or elliptic to obovate, plane, not cucullate, veins scarcely prominent beneath and smooth, concolorous, not glaucous, thinly chartaceous; apex obtuse to rounded, margin entire, undulate, base subcordate-subamplexicaul to broadly cuneate, not sheathing, free; basal veins 5(7), ± branched, tertiary venation dense, obscure; laminar glands dense, not prominent. *Inflorescence* 1-flowered, pseudo-dichotomous, branching often sympodial and then flowers pseudo-axillary, pedicels 2–4 mm long in fruit; bracts foliar, not reduced. *Flowers* 5–7 mm in diam., stellate. *Sepals* 2·5–5 × 1–1·5 mm, unequal, not imbricate, lanceolate or narrowly oblong to narrowly elliptic, subapiculate or obtuse to rounded; veins 3–7, unbranched; glands mainly linear, distally punctiform. *Petals* pale lemon-yellow or pale apricot-yellow to orange-yellow, not (?) tinged red, 2·5–5·5 × 2–2·5 mm, equalling or slightly exceeding sepals, obovate-oblong; apiculus and glands absent. *Stamens* 12–15, indistinctly 4–5-fascicled or not grouped, longest 2–4 mm long, *c.* 0·75 × petals. *Ovary* 1·2–2 × 1·2–1·5 mm, ellipsoid-subglobose; styles (4) 5, 0·3–0·5 mm long, *c.* 0·3 × ovary; stigmas narrowly capitate-clavate. *Capsule* 3·5–5 × 2·5–3·5 mm, cylindric-ellipsoid, obtuse to rounded, *c.* 1·2 × sepals. *Seeds* 0·5–0·6 mm long; testa ribbed-scalariform.

Muddy or sandy margins of lakes and rivers; 1200–1620 m.

Zaire (Shaba), Zambia (northern, western, Barotseland), Angola (Bie), and Namibia (Caprivi).

ZAIRE. Shaba: ter. Kapanga (fl), *Overlaet* 570 (BR); 7 km SW. of Katshupa, R. Lofoi, 1620 m, 8 November 1968 (fl & fr), *Malaisse* 6020 (K).

ZAMBIA. Northern: Chinsali Distr., Shiwa Ngandu, L. Young, 1350 m, 19 January 1959 (fl & fr), *Richards* 10739 (K). Western: see type. Barotseland: Mankoya Distr. near Luena R., 20 November 1959 (fl & fr), *Drummond & Cookson* 6641 (K).

ANGOLA. Bié: *General Machado, picada do Cuemba para o Canhumbo, 1400 m, October 1965, *Teixeira* et al. 8993 (LISC).

NAMIBIA. Caprivi: Andara, Okavango R., 8 March 1958 (fl & fr), *Merxmüller & Giess* 1975 (K).

H. oligandrum differs from *H. scioanum*, its nearest relative, in the shorter, more numerous styles and the shorter pedicels and fewer stamens, as well as in habitat. It occurs at lower altitudes and at river and lake margins, not in bogs and marshes.

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ADDENDUM

P. 141: To the synonyms of 49. *H. globuliferum*, add the following:

H. perrieri N. Robson in *Garcia de Orta*, séries Bot. **1**: 87 (1973). Type: Madagascar, Antsirabé, 13 December 1959 (fl & fr), *Schlieben* 8143 (BM!-holotype; K!, Z!-isotypes).

SYSTEMATIC INDEX

Accepted names are in roman and synonyms in *italic*, new names and principal references are in **bold**. An asterisk (*) denotes a figure. B = sect. *Brathys*, T = sect. *Trigonobrathys*.

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